S. 153

The Lincolnshire Naturalist

Volume 26 Part 1

THE NATURAL HISTORY MUSEUM
10 FEB 2005

Transactions of the Lincolnshire Naturalists' Union
for 2003, published 2004

The Mustelids of Lincolnshire
Bees of Lincolnshire Part 2
Lincolnshire chalcid wasps
Lincolnshire lichens

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Registered Charity Number 255645 http://www.lnu.org
ISSN 0963-0961
Printed by T2 Digital Print, New Media House, 79a Broadway,Peterborough, PE1 4DA

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THE MUSTELIDS OF LINCOLNSHIRE

Mark Crick

"Weaseling out of things is important to learn. It's what separates us from the animals. Except the weasels". *Homer Simpson.*

INTRODUCTION

The wake of the animal snaked towards me rapidly through the wheat field, its creator not noticing or not minding the noise it was making in broad daylight as it crashed through the ripe stalks. Clearly it hadn't detected me even though I was standing directly in front of the small copse that it seemed to be heading for on the edge of the field. Around 3 metres from me – but still unseen – the creature stopped for the smallest moment, made a slight change to its path and suddenly the badger loped out of the wheat barely a metre to my left and straight into the dense hawthorn thicket at my back.

My first encounter with a badger in the Buckinghamshire countryside when I was 8 years old established my interest in wildlife and nature conservation, including involvement in the early days of the Buckinghamshire Badger Group. It wasn't until much later in my professional and personal life that I widened this interest into otters and that *bête noire* of the riverbank, the American mink. Yet outside of the charismatic otter and badger few people give much attention to this small group of mammals, except in economic terms as pests; as somehow 'lesser' animals ('weasel words' anybody? What about being 'badgered'?); or, less so in the UK these days, for their pelts. This address aims to give a more balanced picture of the group, what we know about them in Lincolnshire and hopefully encourage more people to take an interest in their colourful, but often short lives.

WHAT ARE THE MUSTELIDS?

The mustelids are a group of competitive, opportunistic (preferential) carnivores with a near global distribution (only Australia and Antarctica have no native or naturalised mustelids). The c. 70 species known typically have long bodies, short legs and most tellingly an anal gland whose usually pungent secretions are used in various ways for territorial marking, social bonding and other forms of communication. Across the world they are either considered as vermin or desirable for their pelts or (as in the case of American mink) both, the balance often being due to geography or history.

The seven UK species, all of which are found or have occurred in Lincolnshire, range in body size from 20-50 cm. Larger species such as badger and otter are more specialised in their diet (yet still quite catholic eaters) and more territorial than their smaller relatives. Genetic studies have shown that many of the species are even more similar that their appearances would suggest; for example the various species of martens found throughout the northern hemisphere are more closely related to stoats than stoats are to weasels (Sleeman 1989). Where the ranges of similar species of mustelid overlap dietary or other behavioural changes have evolved to allow co-existence.

Many of the mustelids have to cope with a combined reproductive blessing and curse known as delayed implantation. After mating and fertilisation, the resulting embryo goes into a period of suspended development for several months before implanting into the uterine wall and developing normally. In some species this mechanism can help with reproductive success, for example, in winter when food resources are scarce and the mother becomes more or less dormant, delayed implantation means that energy isn't needlessly wasted on supporting a developing embryo. Yet delayed implantation, where it occurs in a species, cannot be switched on or off in response to environmental cues. If food resources are abundant, delayed implantation prevents the species reproducing quickly in the same ways as many of its competitors (MacDonald and Barrett 1995). Some mustelid species have come up with behavioural or other adaptations to the potential disadvantages, as will be described in later sections.

Over the rest of this article I have set out a little of the natural history of all seven mustelids. Wherever possible, I have said what is known about the status of the species in Lincolnshire further to the descriptions in Maurice Johnson's (1982) atlas. Although I have given some description of each animal, I have concentrated on aspects of behaviour and ecology, as more detail on physical description can be readily gleaned from most popular natural history guidebooks.

BADGER

The badger *Meles meles* (plate 1) is probably the most familiar – yet still seldom seen – mustelid in Lincolnshire, perhaps in the UK, with the striking black and white face widely used as a conservation emblem. The greyish colour of rest of the coat – due to parti-coloured hairs that are black at the base and almost white at the tip – giving effective camouflage from dusk to dawn although the black and white striped head has been proposed by some authorities (such as Neal 1986) as both partly camouflage and as a warning sign to other animals. It certainly works as the latter as I have seen other animals take off when a badger suddenly raises its head from the usual snuffling position.

By far the largest mustelid by weight (a full grown boar can reach over 17kg), badgers are preferential carnivores – the preferred diet being worms, with over 200 being consumed in a night – but they are omnivorous and will take a range of prey. Hedgehogs, as well as being competitors for worms, can make a good meal; the long foreclaws of the badger are ideal for unrolling a curled, defensive hedgehog and scooping out the soft parts just as we might scrape out a melon.

The badger's foreclaw is as useful for unrolling hedgehogs as digging.

Photo Geoff Trinder

Badgers live in extended family groups, with one boar and sow as the dominant breeders and a mixture of other adults and young from previous generations. Individuals can live up to 14 years but rarely exceed 8 or 9 in the wild, due to a mixture of disease and other factors including traffic fatalities. Their eyesight is poor and so scent and vocal systems of communication are more important. Litters of up to 5 cubs – the size of the litter usually reflecting the relative availability of food for the parents in the previous year – are born in January or February, but delayed implantation means that breeding can occur at any time of the year. Although birth is in the middle of the European winter this delay means that the sow badger and her cubs are well placed to make maximum potential of spring food resources when the cubs first appear above ground in April or May.

Older mammal textbooks (e.g., Harrison Matthews 1952) suggest that badgers prefer to live in woodlands with pasture – for the supply and ready excavation of earthworms – nearby. Even where both habitats remain, this is not a common juxtaposition in Lincolnshire, particularly in the Fens. However badgers are nothing if not adaptable (there are many now urbanised populations of badgers that raid rubbish bins) and will take advantage of any good cover. Many drainage engineers in the Lincolnshire Fens have often cursed their adaptability in making setts wherever some scrub lies on top of the pasture-like grassy banks of larger drainage ditches and river embankments (I recall having to defend them in this situation when serving on the Lincolnshire Flood Defence Committee). The populations are perhaps larger in the Wolds, but the Badger Group is currently undertaking more comprehensive recording which should give us a better picture of their current distribution and concentration.

Although a conservation emblem, the badger's relationship with humans is more complex. Once legally hunted and baited, the badger now enjoys strong legal safeguard under the Protection of Badgers Act 1992. However illegal persecution is still a problem in many parts of the country, which has led to the formation of badger protection groups across the country (including a recent one in Lincolnshire). Legal protection has led to a substantial increase in badger populations over the past two decades, and concerns over the role of badgers in the transmission of bovine tuberculosis (which they can carry) to cattle. However after many years of modelling, experimental badger culls in TB outbreak areas, and a mix of other control measures the role, if any, of badgers in the spread of bovine TB is still not fully understood.

OTTER

Although lighter than badgers, otters *Lutra lutra* are the longest of our native mustelids (a dog otter can reach up to 110cm in length) but are even less frequently seen. With webbed feet and a dense light brown pelage, otters are well adapted to both an aquatic lifestyle and are able to swim at up to 1 metre per second. Although they are specialist fish predators, their diet is quite cosmopolitan; a spraint found in Lincolnshire during otter survey work some 10 years ago surprisingly (but confirmed by independent examination) contained bone fragments from a brown rat.

Dog otters are renowned for their huge ranges within which there can be many harems – the only social grouping - of females (possibly with young cubs of up to 12 months). Mating can potentially take place at any time of the year. Although not constrained by delayed implantation the long period of parental care means that otters tend to only have one litter of 2-3 cubs per year.

Otter
Picture English Nature

Otter holts are usually – again according to the older guidebooks – found in the rootplates of large trees on the riverbank. This is a habitat not often found in Lincolnshire and otters have made do with natural or artificial piles of dead timber near to the watercourse, where 'slides' may mark the usual entry exit points of otter into the river (plate 2)

The changing status of otter in Lincolnshire is better recorded than other mustelids, in part due to the records of former otter hunts. The decline of otter nationally - now recognised as due to a combination of habitat loss and pesticide poisoning – has been described in detail elsewhere (see for example Jefferies 1996) and the picture was reflected in the decline in Lincolnshire. In 1886 otter was described as 'never having been so numerous on the Welland' yet by 1957/8 the packs of otter hounds still operating at that time in Lincolnshire had great difficulty finding any quarry (Johnson 1982). Otters were also occasionally caught in fyke nets whilst hunting their favourite diet of eels, which can only have weakened the populations further. Yet reports persisted of occasional sightings even in the middle of the county and it was against this backdrop that a thorough survey of the county was undertaken by the then National Rivers Authority and the Lincolnshire Wildlife Trust in 1994. Only one positive site for otter was recorded – more than had been expected (at very low densities territorial sprainting declines making signs even more difficult to find (Chanin 1985)), and an indication that there was a small remnant population. A combination of a small captive release programme by the Vincent Wildlife Trust in the mid-1990s and the natural spread of otter populations from adjoining areas (part of a national trend, assisted by a more enlightened approach to river management) meant that by 2000/02 over 30% of the sites checked in Lincolnshire had some evidence of otter presence (Environment Agency, unpublished data). Signs to date have been concentrated on the Lymn, Bain and Welland, but it is now only a matter of time before strong breeding groups become established throughout the county (plate 3).

AMERICAN MINK

The American mink *Mustela vison*, should not be confused with the European mink *M. lutreola*, a species that has never been found in the UK and whose declining numbers on the continent are the subject of intense conservation work. The American mink is more closely related to – and shares many of the habits of - the UK-native polecat and is the epitome of the 'versatile opportunist'.

A massive expansion in the fur trade in the early 1900s saw American mink imported into fur farms in the UK. Within a few years it had escaped into the wild, with the first breeding in the wild recorded in Devon in 1956. Licensing of mink farms in 1962 saw a decrease in the number of fur farms but this was balanced by an expansion in the size of those that remained such that overall numbers in captivity - and the stock for deliberate or accidental release into the wild - stayed similar (Baker 1989). Although there were never many mink farms in Lincolnshire, mink rapidly colonised many of our waterways. Their ability to spread quickly is illustrated well by a story of a 'pink' (basically albino) mink that escaped from a farm in Lincoln in September 1968 and was recovered some 50 days alter over 20 miles from the farm (J. Lill, personal communication, quoted in Baker 1989).

In the US, the American mink is a cosmopolitan generalist that takes more mammals than fish (Macdonald and Strachan 1999), even climbing trees to get its prey. In the UK, the American mink took advantage of the decline in otter numbers over the last century and moved into a readily available niche (plate 4). As a generalist it has also become a substantial predator of water voles, whose populations, like otter in the UK, had already been heavily adversely affected by unsuitable river management practices and so the focus of conservation efforts.

Given this background it is little surprise that many apparent sightings of otter on our waterways are often sightings of mink. Identification is particularly difficult in the water where the distinctive dark brown pelage of American mink is difficult to see (although the mink usually swims with its head and shoulders clear of the water, unlike otters). Mink are also as active in the day as night, unlike the largely nocturnal otter.

Water vole numbers have been heavily hit by the invasion of predatory American mink. Photo Environment Agency.

American mink tend to produce 1 litter of 3-6 kits per year, normally born in April to June (and without delayed implantation) that disperse between October and December the same year.

Today American mink is thought to be on most major and minor watercourses in Lincolnshire, although official records and surveys (e.g., Environment Agency, unpublished data) appear to locate few definite signs. This may be partly due to poor survey effort and low densities (so reducing the need for territorial sprainting signs that are a key field sign). The welcome reappearance of otter on some of the larger Lincolnshire watercourses such as the Welland has forced American mink onto more marginal drainage ditches; unfortunately some of these places are the same marginal habitats that water voles had been forced into due to predation pressure from mink.

PINE MARTEN

The pine marten *Martes martes* ssp *martes* (there is a Sardinian subspecies) is easily the rarest mustelid in the UK and also, despite much research, one of the least well understood. It is cat-sized, with a dense brown pelage and yellow chest (front cover). It also has a scent gland on its abdomen as well as the usual anal gland and both are used for territorial marking. Pine martens spend most of their life as solitary animals with large territories, usually marked by both scats and gland secretions. Within these territories, they tend to occupy dens made by other animals in cliffs and on the ground, as well as in trees, but rarely stay in any one den for very long.

Like most of the other mustelids, pine martens are versatile opportunists in their feeding and habitat preferences and can live for up to 12 years. They become sexually mature at three years and mate in late summer. Following a prolonged gestation due to delayed implantation a litter of between 2-4 kittens are born in April or May.

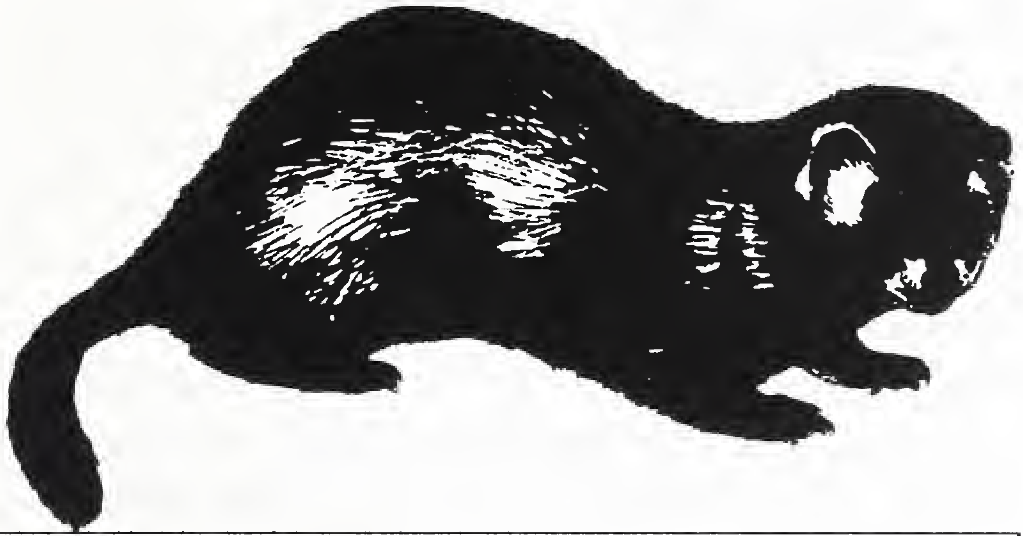
Despite the name the species has never been confined to pine woods in the UK, and the misnomer comes from Victorian naturalists' misidentifications that led to a belief that beech marten (a closely related species) was the species found in the lowlands in this country (Harrison Matthews 1952). Woodlands with large trees are the preferred habitat, and in trees they are more agile than (and often pursue) squirrels, able to clear 2m gaps and to leap up to 4m vertically.

Their relationship with humans has never been easy, with pine martens considered beasts of the chase in mediaeval times (there are reliable records of them being eaten at feasts in the 1500s) (Strachan *et al* 1996), and as pests (for taking game birds and their eggs). Such persecution led to widespread local extinctions. National surveys were carried out in the 1980s (Velander 1983) and 1990 (Strachan *et al* 1996), which showed that outside of its north-west heartland the species was largely restricted to north-west Wales and three small isolated populations in northern England. Unlike the polecat (see below) survey work suggests that the once-persecuted species seems unable to expand from these core areas; low densities (even in the core areas, tracks were found in only 11% of survey sites (Strachan *et al, ibid*)) and the lack of large trees in many parts of the country are thought to be responsible. However survey work is made difficult due to their solitary lifestyle, large territories and hence low density of any tracks or other signs. Furthermore recent molecular DNA analyses of scats collected during such surveys and thought to be from pine martens have shown that at least 25% of the sample was from other species (Woodroffe 2003). Never a very common species in

Lincolnshire, the last certain Lincolnshire record of pine marten was from the Bardney limewoods in 1875 (Johnson 1982). However in 2003 there were 2 records from different parts of the county, at least one of which has been given high credence by experts from the Vincent Wildlife Trust following interrogation of the observer (C. Faulkner, personal communication) and so perhaps we should not give up on pine marten in Lincolnshire just yet.

POLECAT

Otherwise known as the foul marten (or fummard in Lincolnshire) owing to the noxious nature of its musk, the black mask of the polecat *Mustela putorius* is quite a distinctive feature. Polecats have a strongly variegated pelage, with parti-coloured hairs that are cream at the base and almost black at the tip. However the polecat can be confused with domestic ferret, which was bred from polecats perhaps 2000 years ago. Fertile hybrids between escaped or released ferrets and wild polecats are common and difficult to distinguish from the true species (Birks 1993). Previous authors (e.g., Harrison Matthews 1952) suggested that there are noticeable differences between the skulls of hybrids and true polecat. More recent work for the Vincent Wildlife Trust, incorporating molecular DNA analysis, has cast doubt on this suggestion, and proposed that subtle differences in the pelage are more reliable. Tips on discrimination have now been produced as a leaflet by the Vincent Wildlife Trust (Birks and Kitchener 1999)



Polecat Picture English Nature

Although males and females are a similar size (up to 60cm, including tail, when fully grown) males have a broad flat face whilst females have a pointed face. Like many other mustelids, polecats were persecuted due to their catholic diet and opportunist nature, readily taking poultry and game birds. In Europe, polecats have a strong correlation with rabbits, hunted using their acute hearing and sense of smell, as well as a strong association with wetlands and river valleys. The limited distribution of the species in the UK and consequently poor survey information has not allowed similar associations to be shown in the UK to date (Birks 1993).

The persecution referred to above, coupled with incidental capture in rabbit traps and the polecat's limited range and solitary lifestyle, led to the species becoming largely restricted to mid-Wales by 1915. The last record in Lincolnshire had been thought to be 1926 (Johnson 1982) although there has been some evidence that an isolated population of 'fummards' could be found on the dune systems of East Lindsey into at least the 1930s (Weaver, 2000). The First World War led to a decrease in trapping (and myxomatosis further reduced the need in later decades) and heralded the beginning of a recovery in polecat populations. A naturally limited range, allied to a solitary lifestyle, meant that this has been a long and slow recovery. By the early 1990s polecats were being recorded from the Welsh Marches, suggesting an advance of around 3-4km/year; by 1999 polecat was recorded in east Northamptonshire (Birks and Kitchener 1999). Given this rate of spread, it is quite likely that the species has now reached Lincolnshire, and the LNU would welcome any records. However given the identification difficulties mentioned above, monitoring the real status of the species is difficult. Feral ferrets (and hence the likely occurrence of fertile ferret/polecat hybrids) are more common in mid and eastern England; and records of the spread of polecat are mainly (around 60%) from road casualties, where essential evidence for discrimination of hybrids from the true polecat may be lost or badly compromised (Plate 5). In addition to a lack of road sense (!), polecats also suffer from secondary poisoning, usually aimed at rats (Birks 1993). Some authors have suggested that selection pressure is likely to favour polecat characteristics over the domesticated characteristics of feral ferrets, (e.g., Birks and Kitchener 1999). If so, conservation effort on water voles – which are a preferred food item of polecat in Europe (Birks and Kitchener *ibid*) – may have a more interesting dilemma than mink control at some point in the near future.

STOAT

Stoats and weasels are easily the commonest members of the mustelid family in Lincolnshire and the UK (as well as the world's smallest carnivores), but the animals and their field signs are still only seen infrequently. Stoats are generally the larger species (males being larger than females and up to 44cm with tail), with a largely chestnut brown pelage save for a white or yellow bib and black tail tip.

Stoat
Picture
English
Nature

Some writers have suggested that the tail tip might be used to distract predators when the stoat is caught out in the open (King 1989). However, the most notable aspect of the stoat's pelage is the winter ermine (one of two moults each year), a highly prized pelt. The moult to a white coat is now known to be due to an interaction between genetics, temperature and day length, and is a rare occurrence in southern England where a white winter coat is less of an advantage (Macdonald and Barrett, 1995). White winter moults do still happen in Lincolnshire however, with stoats in ermine reported regularly at Whisby Nature Park (P. Porter, personal communication).

Stoats can live up to 10 years but rarely reach more than 2 in the wild. Stoats mate in May or June and following a period of delayed implantation will give birth to a litter of 9-13 kits in spring, the number being dependent on food abundance previous to the spring in which mating occurred. Stoats have evolved a quite extreme means of getting around some of the disadvantages arising from delayed implantation; female kits are born sexually mature and usually mate for the first time before they are weaned, typically with one of their mother's partners (males do not reach sexual maturity until 1 year). Although adult males and females are generally solitary, females and their kits form small social groups and may hunt together until the kits leave the mother's nest at around 3 months; this may be the factual basis behind the folk idea of stoats 'hunting in packs' (King 1989).

Stoats are often thought of as specialist predators of rabbits (plate 6), and it is likely that this niche restricts competition with weasels. Certainly stoat will take other prey and are considered pests by game bird concerns (McDonald 2002).

Although quite abundant across the UK and Lincolnshire, a national drop in numbers of both stoat and weasel in trapping returns from the National Game Census has led to some concern of a national drop in populations. If so, this could be partly due to secondary poisoning, where non-target small rodents eat poisoned lures meant for rats (McDonald 2002)

WEASEL

The weasel (the UK subspecies is *Mustela nivalis* ssp *vulgaris*) is the smallest British member of the mustelids (at no more than 37cm, including tail), the weasel can be readily distinguished from stoat by smaller size (also the tail is proportionately smaller relative to body length), white undersides (as opposed to the white bib of stoat) and the absence of a black tip to the tail (plate7). In NE Europe, a subspecies (*M. nivalis* ssp *nivalis)* also adopts an ermine coat, but this feature has never been recorded in UK weasel populations (King 1989). The small size of weasel requires it to eat the equivalent of a third of its body weight each day. Although this restriction might suggest that weasels should have a very cosmopolitan diet, it has evolved into a specialist predator of small rodents (but will take rabbits if necessary). Studies show that the abundance of weasel is closely correlated with the abundance of small rodents (and can similarly 'boom and bust'), but inversely correlated with the abundance of rabbit (as longer grass is favoured for the runs of the same small rodents) (King 1989).

Unsurprisingly weasels closely resemble stoats in their habitat preferences – being found in almost any habitat in Lincolnshire - and their life history. However they are not restricted by delayed implantation and can have up to 2 litters per year of 4-5 young if food resources allow. Individuals can live up to 3 years but rarely live more than 1 in the wild (McDonald 2002).

As with stoats, National Game Census returns suggest that weasel populations are declining for reasons unknown (McDonald, *ibid*). Weasels are now considered to be less of a pest than stoat by game managers, but are known to suffer similarly from secondary poisoning. Both stoats and weasels also suffer from skrjabingylosis, a condition caused by a parasitic nematode worm that causes extensive lesions on the brain. The condition is so prevalent in weasels and stoats (although it is a problem for other mustelids too) that it has been advanced as an explanation for the strange dancing movement - once thought to be a 'dance of death' aimed at mesmerising prey - that both species exhibit (King 1989).

WHAT FUTURE FOR THE MUSTELIDS IN LINCOLNSHIRE?

Almost all of the UK mustelid species are or were found in Lincolnshire, yet the only encounter most of us will have with any of these is a fleeting glimpse or perhaps encountering a pathetic corpse on the road. We still know little about aspects of the biology of the majority of these species, and although the LNU does receive records of mustelids these are still not sufficient to allow confident assessment of the status of any of the species (with the possible exception of the more readily surveyed otter and badger). Is the reported national decline in stoat and weasel populations reflected in Lincolnshire? Has true polecat made it back in to Lincolnshire (do we know whether it ever really vanished from the sandhills of East Lindsey)? Has pine marten managed to hang on in some isolated woodlands? We do not know for sure, locally or nationally, and yet these are, other than deer, Lincolnshire's largest native mammals. If we cannot encourage the public to value these charismatic species and record (and submit!) their sightings of them – as well as recording them ourselves - what chance do we have of engaging public interest in obscure species of flies, fungi and plants? The mustelids deserve to have their place in our landscape – both as villain and valued animal - understood and cherished, and so have a future in our wild spaces.

ACKNOWLEDGEMENTS

Many people helped with records and other information for this article, in particular Colin Faulkner, Chris Addy and Caroline Tero (Environment Agency). I am particularly grateful to Alan Dale, Roger Labbatt, David Williams at English Nature and the Environment Agency for help with illustrations and pictures for this article and the Presidential address. My partner Helga also deserves thanks for patience and understanding on the many occasions when I hogged the computer to put this article and the talk on which it was based together.

POSTSCRIPT

As part of ongoing research into national populations of otters, the Environment Agency is interested in any otter corpses. If you do come across a dead otter, call them on their national emergency number (0800807060) and give clear details on where the corpse is to allow Agency staff to collect it for post-mortem examinations.

Mark Crick was the 110th President of the Lincolnshire Naturalists' Union and the Presidential address on which this paper is based was given at Whisby Nature Park Education Centre in March 2004. Mark was Conservation Officer for the (then) Lincolnshire and South Humberside Trust for Nature Conservation from 1990 to 1997 and has also worked in an environmental consultancy, local government and the former Nature Conservancy Council. Following a (very brief) period in teacher training, he now works for the Joint Nature Conservation Committee in Peterborough. His interest in wildlife, including mustelids, came from long childhood explorations of the Chilterns in Bedfordshire, Buckinghamshire and Hertfordshire.

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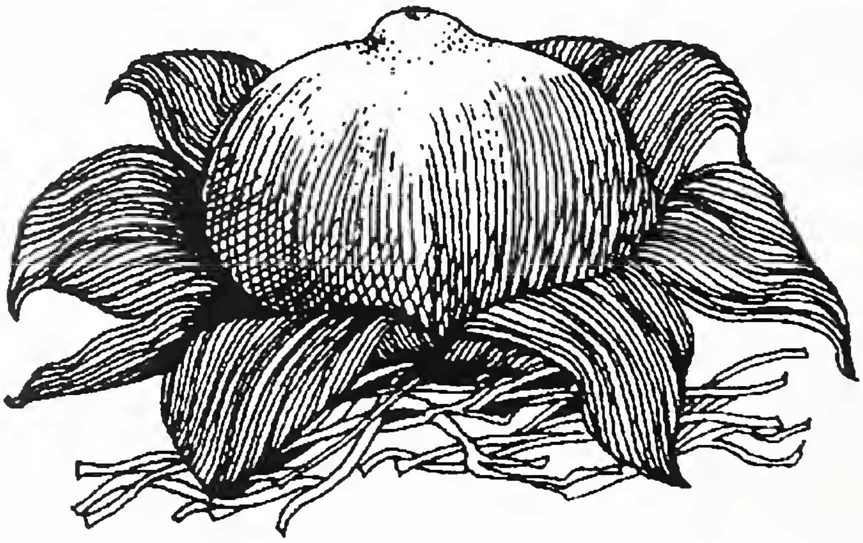

THE BEES (HYMENOPTERA: APIDAE) OF WATSONIAN LINCOLNSHIRE. 2. MEGACHILINAE: CARPENTER (CHELOSTOMA), MASON (OSMIA) AND LEAF-CUTTER (MEGACHILE) BEES WITH THEIR CUCKOOS (COELIOXYS).

Michael E. Archer

This is the second paper on the bees of Lincolnshire and deals with the bees of the subfamily Megachilinae (plate 8). An introduction to these bees can be gleaned from references given in Archer (2003). Recent identification keys in English are given by Banszah & Romasenko (2001) for all the species of the Megachilinae and Else (1999) just for *Megachile*. Perkins (1925) for the *Megachile* will also be found useful. Otherwise reference will need to be made to Saunders (1896). Well-illustrated keys in German are given by Scheuchl (1996) for the Megachilinae and Warnche (1992) for *Coelioxys*. Else (in preparation), when published, will be the standard book on the British bees dealing with the natural history of each species in detail besides giving illustrated keys to all the species. The current major sources of species information are the Provisional Atlases of the Bees, Wasps and Ants Recording Society (BWARS). These provide a national distribution map and detailed natural history information for each species. These Atlases are far from complete, but the relevant one will be indicated as each species is considered.

This paper considers 86 records where a record represents a specimen differing in one of the following three variables: name, sex and day-date of capture or observation. The records were made by 15 recorders from 24 sites. The recorders were: V. Adams (VA), M.E. Archer (MEA), H. Britten (HB), B. Bushby (BB), J.W. Carr (JWC), C.F. George (CFG), A. Godfrey (AG), M.W. Graham (MWG), D.S. Hill (DSH), W.G. Hoff (WGH), H.P Jones (HPJ), H.W. Kew (HWK), R.S. Key (RSK), K.E. Rowland (KER) and R.W.J. Uffen (RWJU). The sites with grid references and Natural Areas (Weaver 1998) are given in the appendix. The sites are distributed between the following six Natural Areas: Lincolnshire Wolds (6 sites), Lincolnshire Coast & Marshes (7), Trent Valley & Rises (2), The Fens (1), North Lincolnshire Coversands & Clay Vale (7) and Lincolnshire & Rutland Limestone (1).

For each species the records are given in year order with the number of records and the date-spread of records. The year of some of the records of M.W. Graham are not known so are given as 1941 (Graham 1941). The Archer national status (ANS) (Archer 2002) are given for each species.

Subfamily Megachilinae

The megachilines are long-tongued bees with the pollen carried by the female with long stiff hairs on the ventral gastral sterna. Nationally there are 39 species (one species restricted to the Channel Islands) in nine genera with 12 species in four genera in Lincolnshire.

The Carpenter Bees

The Carpenter Bees (*Chelostoma* Latreille, 1808) are solitary small to medium-size (3mm-10mm long) bees with elongated black bodies. The head and thorax are covered by long thin grey hairs and the rear margins of the gastral segments fringed with shorter white hairs. The pollen-collecting hairs are a whitish colouration. They are aerial nesters in holes in dead wood and stems. The cells are arranged in a linear fashion, separated by partitions of mud and sand grains stuck together with the help of salivary secretions or nectar. The females are oligolectic (limited plant species sources) for pollen, e.g. *C. florisomne* on *Ranunculus*. They over-winter as diapausing prepupae or even as pupae. Nationally there are two species with one species in Lincolnshire.

Chelostoma florisomne (Linnaeus, 1758). ANS Widespread.
1 record.
Old Bolingbroke, 1941, MWG.

The Mason Bees

The Mason Bees (*Osmia* Panzer, 1808) are medium-size to large (6mm-to over 10mm long) bees coloured black or with a metallic brown-green or blue colouration. The body of *O. rufa* is covered by long reddish-coloured hairs with red pollen collecting hairs. The bodies of *O. caerulescens* and *O. leaiana* have a covering of long thin hairs. The pollen collecting hairs are black on *O. caerulescens* and red on *O. leaiana*. Usually they nest in crevices in aerial positions. *O. caerulescens* and *O. leaiana* nest in wooden posts and crumbling mortar walls using chewed leaf pulp (leaf mastic) for the cell walls and partitions. *O. rufa* nests, in addition, in snail shells and old burrows in vertical earth banks using mud for the cell walls and partitions. The females are polylectic (many plant species sources) for pollen. Usually only one generation each year and they over-winter as diapausing adults. Nationally there are 11 species with three species in Lincolnshire.

Osmia rufa (Linnaeus, 1758). Edwards (1988). ANS Universal.
16 records. 25 April-20 June.
Kirton-in-Lindsay, 1889, CFG;
Old Bolingbroke, 1941, MWG;
Woodhall Spa, 1950, HB; Grantham, 1952, HB;
Grebby, 1974, 1976, 1992, WGH; Grasby, 1975, BB;
Skegness, 1984, DSH;
Welton Wood, 1988, WGH;
Horncastle, 1995, 1998, AG;
Tattershall Sand Pits, 1995, AG;
Grimthorpe, 1998, AG; Skellingthorpe, 1999, KER;
Grimsby, 2001, VA.

Osmia caerulescens (Linnaeus, 1758). ANS Widespread.
6 records. 4 June-21 July.
Kirton-in-Lindsay, 1906, CFG;
Old Bolingbroke, 1941, MWG;
Gibraltar Point, 1990, DSH, 1996, 1997, MEA.

Osmia leaiana (Kirby, 1802). ANS Widespread.
7 records. 11 June-3 August.
Hameringham, 1936, HPJ;
Grantham, 1952, HB;
Gibraltar Point, 1993, 1995, 1997, MEA;
Kirkby Moor, 1996, MEA.

The Leaf-Cutter Bees

The leaf-cutter bees (*Megachile* Latreille, 1802) are medium-size to large (6mm to over 10mm long) bees. They have black bodies covered in thin short brown hair. There are no arolia between the two claws of each apical tarsal segment. They are usually aerial nesters in crevices such as decaying wood, woody stems, old masonry, but also in crevices under stones and in the soil. *M. circumcincta* is a subterranean nester in firm sandy soils. The cells are made from cut pieces of leaves, or sometimes petals. Rectangular pieces are cut for the side walls and circular pieces for the end walls of the cell. The cells are provisioned with a semi-liquid mixture of pollen and nectar. Females are probably polylectic for pollen sources. There is one generation a year with over-wintering as a diapausing prepupa within its cocoon. Nationally there are eight species with five species in Lincolnshire.

Megachile centuncularis (Linnaeus, 1758). ANS Universal.
8 records. 21 June-2 August.
Kirton-in-Lindsay, 1888, CFG;
Hameringham, 1936, HPJ;
Old Bolingbroke, 1941, MWG;
Gibraltar Point, 1993, MEA;
Kirby Moor, 1995, 1996, MEA;
Rauceby Warren, 1995, MEA;
Saltfleetby-Theddlesthorpe Dunes, 1998, MEA.

Megachile circumcincta (Kirby, 1802). ANS Universal.
10 records. 7 June-29 July.
Donnington-on-Bain, 1886, HWK;
Skegness, 1900, JWC;
Kirton-in-Lindsay, 1906, CFG;
Somersby, 1948, MWG;
Woodall Spa, 1948, MWG;
Doona Nook, 1983, MEA;
Saltfleetby-Theddlethorpe Dunes, 1984, MEA;
Gibraltar Point, 1996, MEA.

Megachile ligniseca (Kirby, 1802). ANS Widespread.
6 records. June-18 August.
Mablethorpe, 1886, HWK;
Hameringham, 1936, HPJ;
Woodall Spa, 1939, 1948, MWG.

Megachile versicolor Smith, 1844. ANS Universal.
9 records. 17 June-30 July.
Risby Warren, 1984, MEA;
Saltfleetby-Theddlesthorpe Dunes, 1984, MEA;
Gibraltar Point, 1996, MEA;
Messingham Sand Quarry, 2000, 2001, MEA;
Rauceby Warren, 2002, MEA.

Megachile willughbiella (Kirby, 1802). ANS Universal.
14 records. 17 June-20 August.
Kirton-in-Lindsay, 1888, CFG;
Old Bolingbroke, 1941, MWG;
Kirkby Moor, 1991, MEA;
Messingham Sand Quarry, 1992, 2001, MEA, 1996, 1999, RWJU;
Gibraltar Point, 1995, 1996, MEA;
Rauceby Warren, 1995, 2001, MEA.

Cuckoo Bees

The cuckoo bees (*Coelioxys* Latreille, 1809) are medium-size (6mm-10mm long) relatively hairless bees with prominent white hair spots or bands on the rear margin of some gastral terga. The gaster in the female has a pointed end. They are cleptoparasites on species of *Megachile* and *Anthophora*. On finding a cell of its host the female cuts a slit in the cell wall through which an egg is laid. The enormous jaws of the first instar larva are used to destroy the egg or young larva of the host. Later instars have normal size mandibles which are used to feed on the host's provisions. There is one generation a year with over-wintering as a diapausing pre-pupa in a cocoon. In Lincolnshire *C. elongata* could parasitize *M. centuncularis, M. circumcincta* and *M. willughbiella; C. inermis* could parasitize *M. centuncularis, M. versicolor* and *M. ligniseca;* and *C. rufescens* could parasitize *M. circumcincta, M. ligniseca* and *A. furcata*. Nationally there are eight species (with one species restricted to the Channel Islands) and three species in Lincolnshire.

Coelioxys elongata Lepeletier, 1841. ANS Universal.
5 records. 30 June- 4 July.
Kirton-in-Lindsay, 1888, CFG;
Skegness, 1900, JWC;
Old Bolingbroke, 1941, MWG;
Risby Warren, 1987, MEA.

Coelioxys inermis (Kirby, 1802). ANS Widespread.
2 records. 7 July-29 July.
Saltfleetby-Theddlesthorpe Dunes, 1984, MEA.

Coelioxys rufescens Lepeletier & Serville, 1825. ANS Widespread.
2 records. 12 July-2 August.
Grantham, 1942, HB;
Risby Warren, 1987, RSK.

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Appendix – The grid references and natural areas of sites. The actual location of some sites (1,4,9,12,13,15,19,21,24) are unknown, so that grid references for these sites can only be approximate.

1. Donington-on-Bain. TF2382. Lincolnshire Wolds.
2. Doona Nook. TF4299. Lincs Coast & Marshes.

3. Gibraltar Point. TF5557. Lincolnshire Coast & Marshes.
4. Grantham. SK9136. Trent Valley & Rises.
5. Grasby. TA0804. Lincolnshire Wolds.
6. Grebby. TF4368. Lincolnshire Wolds.
7. Grimsby. TA2709. Lincolnshire Coast & Marshes.
8. Grimthorpe. TF0320. The Fens.
9. Hameringham. TF3167. Lincolnshire Wolds.
10. Horncastle. TF2669. Lincolnshire Wolds.
11. Kirby Moor. TF2262. North Lincolnshire Coversands & Clay Vale.
12. Kirton-in-Lindsay. SK9398. North Lincolnshire Coversands & Clay Vale.
13. Mablethorpe. TF5085. Lincolnshire Coast & Marshes.
14. Messingham Sand Quarry. SE9103. Lincolnshire Coversands & Clay Vale.
15. Old Bolingbroke. TF3564. North Lincolnshire Coversands & Clay Vale.
16. Rauceby Warren. TF0343. Lincolnshire & Rutland Limestone.
17. Risby Warren. SE9313. North Lincolnshire Coversands & Clay Vale.
18. Saltfleetby-Theddlesthorpe Dunes. TF4791. Lincolnshire Coast & Marshes.
19. Skegness. TF5663. Lincolnshire Coast & Marshes.
20. Skellingthorpe. SK9271. Trent Vale & Rises.
21. Somersby. TF3472. Lincolnshire Wolds.
22. Tattershall Sand Pits. TF1959. North Lincolnshire Coversands & Clay Vale.
23. Welton Wood. TF4670. Lincolnshire Coast & Marshes.
24. Woodhall Spa. TF1963. North Lincolnshire Coversands & Clay Vale.

A LINCOLNSHIRE LIST OF CHALCID WASPS (HYMENOPTERA, CHALCIDOIDEA) 1. THE PUBLISHED LITERATURE

Steve Compton and Roger Key

Introduction

Chalcids (Hymenoptera, Chalcidoidea) are a species rich group of wasps, with around 1800 species recorded from Britain (J.S. Noyes, personal communication). Under a microscope they often reveal a beautiful metallic colouration, but because of their small size and (until relatively recently) largely inaccessible taxonomic literature, they are one of our least well known groups of insects, and one of the relatively few groups where undescribed species are still regularly turning up in Britain, as well as species new to this country. We have assembled these published records as a prelude to future publications where we intend to list the chalcids we have ourselves collected in the county.

Published records of chalcids from Lincolnshire

The small number of entomologists who have tackled the group has resulted in a relatively small number of published records of chalcids found in Lincolnshire, comprising 55 species (Table 1). The coverage of the Chalcidoidea in the Hymenoptera volume of the revised Kloet and Hincks checklist is very out of date, so the taxonomy of the insects covered here is based on that contained in the CD produced by John Noyes (Noyes, 2002). Askew (1964) includes an additional reference, to *Necremnus cosconius* taken at Astley Bridge, Lincolnshire, but this may be in error, as the only Astley Bridge we can trace is near Manchester.

Biographical notes

Most of the Lincolnshire records were generated during the early 1950's by Marcus Graham and Harry Britten. These records are complementary, in that the former were included in taxonomic papers describing new species, or new British records of what are often nationally uncommon species, while the latter are in the main the first county records of common and widespread species. Only a few species were added by other collectors (Tables 1 & 2).

The largest number of published records are based on collections made by Harry Britten in the early 1950's that are now stored in the Manchester Museum. Born in Wiltshire in 1870, Harry Britten was a polymath self-taught entomologist who worked at the Hope Department of Entomology at Oxford University in the early 20th century and was Assistant Keeper and then Keeper of Entomology at Manchester Museum from 1919 to 1934. He undertook a vast amount of insect collecting across the United Kingdom, particularly in N.W. England (Lancashire, Cheshire and Cumbria), but his obituaries do not mention any specific work in Lincolnshire. In his later life he developed a particular interest in microhymenoptera, although his interest in mymarids went back to the 1930s. His Lincolnshire chalcids all date from the periods September–October 1951 and June–July 1952. He died in 1954. Obituaries were produced by Day & Ellison (1954) and Hincks (1954) amongst others.

The series of publications by Dick Askew covering the Manchester collections did not cover the major subfamilies of the large family Pteromalidae, nor several groups such as torymids and tetrastichines that could not be identified with confidence at the time. This suggests that the Manchester Museum collections probably contain other Lincolnshire material collected by Britten.

Marcus Graham was without doubt the greatest English chalcid taxonomist and a world authority on the group. Born in 1915 he spent some of his childhood at St. Hugh's School, in Woodhall Spa (Boucek & Noyes, 1997). Along with wartime service, initially in the Lincolnshire Regiment, he published a series of short papers on insects in Lincolnshire while based at the Old Bolingbroke Rectory, Spilsby (for example Graham, 1941). Later he became Curator at the Hope Museum, University of Oxford and specialised in the Chalcidoidea, producing major revisions of the more species-rich groups in Britain and making them accessible to general entomologists for the first time. This work continued long after his retirement in 1981, right up to his death in 1995.

His Lincolnshire records are based on several return trips to the county, collecting chalcids at a number of sites, including Woodhall Spa. In several cases the material he collected went on to form the types of species that he described, while one of his re-discoveries was subsequently re-named *Grahamia clinius*.

Discussion

The records summarised here represent only a fraction of the likely true chalcid fauna of Lincolnshire. For example, Copland & Askew (1977) recorded 212 species in one year just from the sand dunes of the Whiteford National Nature Reserve in South Wales. Although equivalent chalcid county faunas are not available, an idea of the likely numbers of Lincolnshire species can be generated by comparison with the proportion of Britain's beetles on the Lincolnshire list. If a similar proportion of chalcids are present, then there are likely to be over 600 species to be recorded from the county, with the published records summarised here accounting for less than 10% of the total.

Table 1. Published records of Lincolnshire chalcids. Ropesley Wood (variously spelt) is probably Ropsley Rise Wood. Collector names are given in full in Table 2.

	Taxa	Locations	Grid Refs	Dates	Collectors	Numbers/sex	Sources
Mymaridae							
	Anaphes						
1	*diana (*Girault, 1911)	Newton	?TF0436	18.vii.1952	HB	1f.	Hincks 1960
	Ooctonus						
2	*hemipterus* Haliday, 1833	Denton	SK8632	3.x.1951	HB	1f	Hincks 1952
		Grantham	SK9136	19.ix-2.x.1951	HB	2f5 m	Hincks 1952
		Grantham	SK9136	20.ix.1951	HB	3m.	Hincks 1952
	Polynema						
3	*permagnum Soyka, 1956*	Near Gibraltar Point	TF5655 TF5560	22.vii.1968	MG	1f.	Graham 1973
Chalcididae							
	Chalcidinae						
	Brachymeria						
4	*minuta* (L,1767)	Grantham	SK9136	27.vi.1952	HB	1m.	Askew 1962a
Torymidae							
	Toryminae						
	Torymus						
5	*baudysi Boucek,1954*	Gibraltar Point	TF5655 TF5560	31.vii.1967	MG		Grahame & Gijswijt 1998
6	*stenus Graham,1994*	Woodhall Spa	TF1963	27.vii.1968	MG	4f.	Grahame & Gijswijt 1998
		Coningsby	TF2358	27.vii.1951	MG	1f2 m.	Grahame & Gijswijt 1998
Pteromalidae							
	Asaphinae						
	Asaphes						
7	*vulgaris* Walker,1834	Lincolnshire					Askew 1965
	Miscogasterinae						
	Seladerma						
8	*parviclava* (Thomson, 1876)	Coningsby	TF2358	27.vii.1951	MG	1f.	Graham 1969
	Pireninae Haliday,1844						
	Macroglenes						
9	*onjungens* (Graham, 1969)	Crowle	SE7712	27.vii & 2.viii.1956	DL		Graham 1969

	Pteromalinae						
	Chlorocytus						
10	*formosus* (Walker, 1835)	Woodhall Spa	TF1963	25.vii.1951	MG	2f.	Graham & Claridge 1965
	Psilonotus						
11	*adamas* Walker, 1834	Scotton	SK89	1962	RRA		Askew 1970b
12	*hortensia* Walker, 1846	Scotton	SK89	1962	RRA		Askew 1970b
	Spilomalus						
13	*quadrinota* (Walker, 1835)	Sutton-on-Sea	TF5281	26.vii.1951	MG	1f.	Gijswijt & Graham 1986.
	Spintherus						
14	*dubius* (Nees, 1834)	Salmonby	TF3273	21.iii.1950	MG		Graham 1969
	Stenomalina						
15	*favorinus* (Walker, 1839)	N. Lincs, Tetford Hill	TF3275	19.vii.1951	MG		Graham & Claridge 1965
	Trichomalopsis						
16	*scaposus* (Graham, 1969)	Woodhall Spa	TF1963	25.vii.1951	MG		Graham 1969
	Spalangiinae						
	Spalangia						
17	*erythromera* Förster, 1850	Grantham	SK9136	28.ix.1951	HB	1f.	Askew 1965

Encyrtidae

	Encyrtinae						
	Aschitus						
18	*zarina* (Walker, 1837)	Tetford Hill, nr Horncastle	TF3275	19.vii.1951	MG	1f.	Graham 1970

Aphelinidae

	Aphelininae						
	Aphelinus						
19	*daucicola* Kurdjumov, 1913	Tetford Hill	TF3275	17.vii.1951	MG	1f.	Graham 1976
20	*varipes* (Förster, 1841)	Newton	?TF0436	18.vii.1952	HB	1f.	Askew 1967

Eulophidae

	Entedoninae						
	Chrysocharis						
21	*crassiscapus* (Thomson, 1878)	Grantham	SK9136	19.ix.1951	HB	1f.	Askew 1970a
22	*illustris* Graham, 1963	Grantham	SK9136	25.ix.1951	HB	1m.	Askew 1970a
23	*mediana* Förster, 1861	Tetford Hill	TF3275	27.vii.51	MG		Graham 1963
24	*nitidifrons* Graham, 1963	Woodhall Spa	TF1963	25.vii.51	MG		Graham 1963
25	*orbicularis* (Nees, 1834)	Grantham	SK9136	20.ix-3.x.1951	HB	3m6 f.	Askew 1970a
		Ropesley Wood	SK9634	30.ix.1951	HB	2f.	Askew 1970a
26	*polyzo* (Walker, 1839)	Grantham	SK9136	19.ix-2.x.1951	HB	3f.	Askew 1970a

27	*pubicornis* (Zetterstedt, 1838)	"Lincolnshire"			?		Askew 1970a
28	*viridis* (Nees,1834)	Ropesley Wood	SK9634	30.ix.1951	HB	1f.	Askew 1970a
	Entedon						
29	*ergias* Walker,1839	Grantham	SK9136	25.ix.1951.	HB	1f.	Askew 1970a
30	*sylvestris* Szelényi, 1981	Newton	?TF0436	18.vii.1952	HB	1m.	Askew 1992
	Grahamia						
31	*clinius* (Walker,1839)	Lincs. N., Salmonby	TF3273	18 vii.51	MG		Graham 1963
	Omphale						
32	*aetia* (Walker,1839)	Salmonby	TF3273	28.vii.51	MG	1f.	Graham 1963
33	*brevis* Graham,1963	Salmonby	TF3273	28.vii.51	MG		Graham 1963
34	*theana* (Walker,1839)	Woodhall Spa	TF1963	25.vii.51	MG	ff.	Graham 1963
	Pediobius						
35	*epigonus* (Walker, 1839)	Grantham	SK9136	6.vi.1952.	HB	2m.	Askew 1970a
		Denton	SK8632	3.x.1951	HB	1f.	Askew 1970a
36	*metallicus* (Nees, 1834)	Grantham	SK9136	16-25.ix.1951.	HB	4m.	Askew 1970a
		Grantham	SK9136	24.ix.1951	HB	2f.	Askew 1970a
	Eulophinae						
	Aulogymnus						
37	*gallarum* (L,1761)	Woodhall Spa	TF1963		JW		Askew 1959
	Cirrospilus						
	vittatus Walker,1838	Grantham	SK9136	15.ix.1951	HB	1f.	Askew 1962b
38		Grantham	SK9136	20.ix.1951	HB	2f.	Askew 1962b
	Diglyphus						
39	*isaea* (Walker,1838)	Grantham	SK9136	20.ix.1951	HB	2m3 f.	Askew 1964
		Grantham	SK9136	26.ix.1951	HB	4f.	Askew 1964
		Ropsley Wood	SK9634	30.ix.1951	HB	1f.	Askew 1964
40	*minoeus* (Walker, 1838)	Denton	SK8632	3.x.1951	HB	1m.	Askew 1964
	Elachertus						
41	*inunctus* Nees,1834	Grantham	SK9136	10.ix.1951	HB	1f.	Askew 1962b
		Grantham	SK9136	20.ix.1951	HB	1m.	Askew 1962b
42	*isadas* (Walker,1839)	"Lincs."			?		Askew 1968
43	*lateralis* (Spinola, 1808)	Grantham	SK9136	19.ix.1951	HB	1m.	Askew 1962b
	Eulophus						
44	*pennicornis* Nees, 1834	Grantham	SK9136	19.ix.1951	HB	1f.	Askew 1964
		Grantham	SK9136	25.ix.1951	HB	1f.	Askew 1964
	Hemiptarsenus						

45	*ornatus* (Nees,1834)	Ropsley Wood	SK9634	20.ix.1951	HB	1f.	Askew 1964
46	*unguicellus* (Zetterstedt, 1838)	"Lincolnshire"			?		Askew 1964
	Necremnus						
47	*cosconius* (Walker, 1839)	Newton	?TF0436	18.vii.1952	HB	1m.	Askew 1964
48	*leucarthros* (Nees, 1834)	Grantham	SK9136	19.ix.1951	HB	1f.	Askew 1964
49	*tidius* (Walker,1839)	Grantham	SK9136	19.ix.1951	HB	1f.	Askew 1964
		Ropsley Wood	SK9634	30.ix.1951	HB	1f.	Askew 1964
	Pnigalio						
50	*pectinicornis* (L,1758)	Grantham	SK9136	26.ix.1951	HB	2f.	Askew 1964
		Grantham	SK9136	19.ix.1951	HB	1m.	Askew 1964
51	*soemius* (Walker, 1839)	Grantham	SK9136	19.ix.1951	HB	1f.	Askew 1964
	Stenomesius						
52	*rufescens* (Retzius, 1783)	Denton	SK8632	3.ix.1951	HB	1f.	Askew 1962b
	Sympiesis						
53	*gordius* (Walker,1839)	Denton	SK8632	3.x.1951	HB	1f.	Askew 1964
		Grantham	SK9136	20.ix.1951	HB	1m.	Askew 1964
54	*sericeicornis* (Nees, 1834)	Grantham	SK9136	24.ix.1951	HB	1m.	Askew 1964
		Grantham	SK9136	19.ix.1951	HB	1m.	Askew 1964
	Tetrastichinae						
	Aprostocetus						
55	*roesellae* (Nees,1834)	Brigg	TA0007	Emerged 18.vii.1909	EAW-P		Graham 1987

Table 2. Collectors of Lincolnshire chalcids, with abbreviations used in table 1.

Collector	Abbreviation
Dick Askew	RRA
Harry Britten	HB
Marcus Graham	MG
L.W. Grensted	LWG
C.J. Guile	CJG
D. Lomas	DL
J.Wield	JW
E.A. Woodroffe-Peacock	EAW-P

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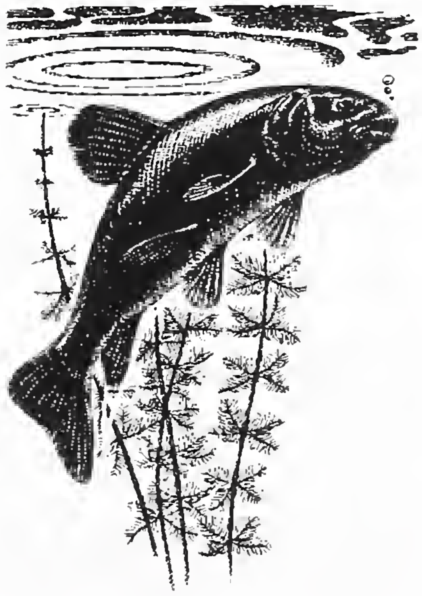

A CHECKLIST OF LINCOLNSHIRE LICHENS

Mark Seaward

Introduction

Nearly a quarter of a century has elapsed since the publication of the previous lichen checklist for Lincolnshire (Seaward 1980), during which time 96 new county and innumerable divisional records have been added to our registers, a large majority of which have resulted from the detailed study of churchyards; furthermore, during this time, there have been considerable changes to lichen nomenclature. In the light of this, it was felt necessary to provide an up-to-date checklist, but remains a stop-gap until such time as a more detailed flora containing ecological, bio-geographical, historical and bibliographical information can be assembled.

Some of these features, so essential to a flora, are to be found in Seaward (1980), but the great changes to our local environment, even over the past two decades, have had dramatic effects on the lichens. Of major importance in this respect have been the impacts brought about by quantitative and qualitative changes in air pollution. The situation prior to this is illustrated in Seaward (1980a), from which there was firstly a shift from dry deposition to wet deposition SO_2 pollution (acid rain), followed by a dramatic reduction in both of these pollutants as a consequence of clean air legislation, to be superseded by hypertrophication, essentially due to excessive nitrogen, mainly derived from agricultural and animal husbandry practices, and to a lesser extent from NO_X emissions.

The nomenclature in the following checklist is according to Coppins (2002) and the distributional data are based on the natural history divisions devised by Jukes-Brown and Woodruffe-Peacock (1895), reproduced in Seaward (1980, fig.2), with 19th century records given in rounded brackets.

Checklist

***Acarospora anomala* H.Magn. 3** [First British record]
***A. fuscata* (Schrad.) Th.Fr. 1-18**
***A. rufescens* (Ach.) Kremp. 1-11,13-18**
***A. smaragdula* (Wahlenb.) A.Massal. 1,3,4,8,10-12,14,15**
***A. veronensis* A.Massal. 6,7,11**
***Acrocordia salweyi* (Leight. ex Nyl.) A.L.Sm. 7**
***Agonimia gelatinosa* (Ach.) Brand & Diederich 3**
***A. tristicula* (Nyl.) Zahlbr. 1-6,8,10,13-17**
***Amandinea punctata* (Hoffm.) Coppins & Scheid. 1-3,5-18**
***Anaptychia ciliaris* (L.) Körb. ex A.Massal. 11,(13),(14),15**
***Arthonia lapidicola* (Taylor) Branth & Rostr. 1,5,11,17,18**
***A. radiata* (Pers.) Ach. 7,8,15**
***A. spadicea* Leight. 8,15**
***Aspicilia caesiocinerea* (Nyl. ex Malbr.) Arnold 17**
***A. calcarea* (L.) Körb. 1-18**
***A. contorta* (Hoffm.) Kremp. 1-8,10,12-18**
    ssp. hoffmanniana S.Ekman & Fröberg 15
***A. radiosa* (Hoffm.) Poelt & Leuckert (2),3,7,13-17**
A. subcircinata (Nyl.) Coppins = *A. radiosa*
***Bacidia arceutina* (Ach.) Arnold 8**
B. naegelii (Hepp) Zahlbr. = *Lecania naegelii*
B. sabuletorum (Schreb.) Lettau = *Myxobilimbia sabuletorum*
B. vezdae Coppins & P.James = *Fellhaneropsis vezdae*
***Baeomyces rufus* (Huds.) Rebent. 2,15**

Belonia nidarosinensis (Kindt) P.M.Jørg. & Vězda 7,9-13,15,17,18
Bryoria fuscescens (Gyelnik) Brodo & D.Hawksw. 7 [Last seen 1962; ? extinct]
Buellia aethalea (Ach.) Th.Fr. 1-18
B. griseovirens (Turner & Borrer ex Sm.) Almb. 2,3,6,7,15,18
B. occelata (Flot.) Körb. 10,15,18
B. punctata (Hoffm.) A.Massal. = Amandinea punctata
Calicium glaucellum Ach. 7
C. viride Pers. 7,8,10,15
Caloplaca aurantia (Pers.) Hellb. 1-18
C. cerina (Ehrh. ex Hedw.) Th.Fr. 11 [Last seen 1970; ? extinct]
C. chlorina (Flot.) H.Olivier 2-18
C. citrina (Hoffm.) Th.Fr. 1-18
C. crenularia (With.) J.R.Laundon 3,6,7,12
C. crenulatella (Nyl.) H.Olivier 10,13
C. dalmatica (A.Massal.) H.Olivier 12
C. decipiens (Arnold) Blomb. & Forssell 1-18
C. flavescens (Huds.) J.R.Laundon 1-18
C. flavocitrina (Nyl.) H.Olivier 3-8,10,11,13-16
C. flavovirescens (Wulfen) Dalla Torre & Sarnth. 1-4,6-11,13,14,16,18
C. holocarpa (Hoffm.) A.E.Wade 1-18
C. lactea (A.Massal.) Zahlbr. 2,11
C. obscurella (Lahm ex Körb.) Th.Fr. 8
C. ruderum (Malbr.) J.R.Laundon 10,12-16,18
C. saxicola (Hoffm.) Nordin 1-18
C. teicholyta (Ach.) J.Steiner 1-18
C. ulcerosa Coppins & P.James 17
C. variabilis (Pers.) Müll.Arg. 14,15,17
Candelariella aurella (Hoffm.) Zahlbr. 1-18
    f. _smaragdula_ Szatala 6,17
C. medians (Nyl.) A.L.Sm. 1-18
C. reflexa (Nyl.) Lettau 3,5,7,8,10,15
C. vitellina (Hoffm.) Müll.Arg. 1-18
    f. _flavovirella_ (Nyl.) A.Henderson 4
C. xanthostigma (Ach.) Lettau 8,15
Catillaria chalybeia (Borrer) A.Massal. 3,4,7,10,11,13-15,17,18
C. lenticularis (Ach.) Th.Fr. 1,9-15,17,18
Cetraria aculeata (Schreb.) Fr. 1,2,5,7,9,10,13
C. chlorophylla (Willd.) Vain. = *Tuckermannopsis chlorophylla*
C. islandica (L.) Ach. 7,10
Chaenotheca chlorella (Ach.) Müll.Arg. 15
C. ferruginea (Turner ex Ach.) Mig. 2,3,7,8,10,11,13,15,16
C. trichialis (Ach.) Th.Fr. 8
Chrysothrix candelaris (L.) J.R.Laundon 7,8,15,16
Cladonia arbuscula (Wallr.) Flot. 1-3,5,7,(9),10
C. cariosa (Ach.) Spreng. 2
C. cervicornis (Ach.) Flot. 2
C. chlorophaea (Flörke ex Sommerf.) Spreng. 1-3,5-11,13-16,18 [Including *C. merochlorophaea* Asah. from 10]
C. ciliata var. _tenuis_ (Flörke) Ahti 2,7,9,10,11
C. coccifera (L.) Willd. 13 [One s.str. record; all older records referable to *C. diversa*]
C. coniocraea (Flörke) Spreng. 1-13,15,16
C. crispata var. _cetrariiformis_ (Delise ex Duby) Vain. 3,7,13
C. digitata (L.) Hoffm. 2,6,7
C. diversa Asperges 1,2,7,10,13
C. fimbriata (L.) Fr. 1-18
C. floerkeana (Fr.) Flörke 1,2,5,7,10,13
C. foliacea (Huds.) Willd. 2,10
C. furcata (Huds.) Schrad. 1-3,5,7,9-11,13,15,16
    subsp. _subrangiformis_ (Sandst.) Abbayes 15-16
C. glauca Flörke 5,7,13
C. gracilis (L.) Willd. 2,5,7,(11),(15) [19th century records probably *C. furcata*]
C. humilis (With.) J.R.Laundon 1,2,6,7,9,13-16
C. macilenta Hoffm. 1,2,5,7,8,10-12,13 [Including *C. bacillaris* Genth recorded from 2,5,7,10]

C. ochrochlora Flörke 7,8,12,13,15
C. pocillum (Ach.) Grognot 1,2,9,11,15,18
C. polydactyla (Flörke) Spreng. 2,7,10,13,15,16
C. portentosa (Dufour) Coem. 1,2,5,7,10,11,13
C. pyxidata (L.) Hoffm. 2,3,5,(7),9,(10),(11),(13),14-16 [Some older records referable to other species]
C. ramulosa (With.) J.R.Laundon 2,3,7,13-15
[*C. rangiferina* (L.) F.H.Wigg Several old records, all referable to other species]
C. rangiformis Hoffm. 1-3,5,9-11,14-16
C. scabriuscula (Delise) Nyl. 1-3,10
C. squamosa Hoffm. 1,2,5,7,10,13-15
var. _subsquamosa_ (Nyl. ex Leight.) Vain. 7
C. subrangiformis Sandst. = *C. furcata ssp. subrangiformis*
C. subulata (L.) F.H.Wigg. 1-3,13,14,16
C. sulphurina (Michx.) Fr. 13
C. symphycarpia (Flörke) Fr. 2
C. uncialis subsp. _biuncialis_ (Hoffm.) M.Choisy 2,5,7,10
Clauzadea immersa (Hoffm.) Hafellner & Bellem. 5
C. metzleri (Körb.) Clauzade & Cl.Roux ex D.Hawksw. 2,16
C. monticola (Ach.) Hafellner & Bellem. 3,6,7,10,13-16
Cliostomum griffithii (Sm.) Coppins 1,3,5,7-18
Coelocaulon aculeatum (Schreb.) Link = *Cetraria aculeata*
Collema auriforme (With.) Coppins & J.R.Laundon 3,5-8,10,13-16
C. bachmanianum (Fink) Degel. 15
C. crispum (Huds.) F.H.Wigg. 2,3,5-7,10,11,14-16
C. cristatum (L.) F.H.Wigg. (2),(15) [? Extinct]
[*C. fasciculare* (L.) F.H.Wigg. (15) [Doubtful in the absence of supporting herbarium material]
C. fuscovirens (With.) J.R.Laundon 3,9,10,12,15
C. limosum (Ach.) Ach. (15) [? Extinct]
C. tenax (Sw.) Ach. 2,3,8-11,13,16
var. _ceranoides_ (Borrer) Degel. 2,3,6-8,12,13,16
Cyphelium inquinans (Sm.) Trevis. 10,11,15,16
C. sessile (Pers.) Trevis. 15
Cyrtidula hippocastani (DC.) R.C.Harris 15
Dimerella pineti (Ach.) Vězda 8,11,16
Diploicia canescens (Dicks.) A.Massal. 1-18
Diploschistes scruposus (Schreb.) Norman 7,9-11,(15)
Diplotomma alboatrum (Hoffm.) Flot. 1-18
D. epipolium (Ach.) Arnold = *D. venustum*
[*D. venustum* Körb. 5 Questionable in the absence of supporting herbarium material]
Dirina massiliensis f. _sorediata_ (Müll.Arg.) Tehler 2-18
Enterographa crassa (DC.) Fée 15
Evernia prunastri (L.) Ach. 2-16
Fellhaneropsis vezdae (Coppins & P.James) Sérus. & Coppins. 10
Flavoparmelia caperata (L.) Hale (2),6-8,(11),13-15
F. soredians (Nyl.) Hale 10,17
Graphis scripta (L.) Ach. (15), also _loc.non cit._ in Lees (1892). [Extinct]
Gyalecta jenensis (Batsch) Zahlbr. 14
Haematomma ochroleucum (Neck.) J.R.Laundon 1-14,16
var. _porphyrium_ (Pers.) J.R.Laundon 1-16,18
Hyperphyscia adglutinata (Flörke) H.Mayrhofer & Poelt 8,10
Hypocenomyce scalaris (Ach. ex Lilj.) M.Choisy 1,3,4,6-8,10,11,13-16,18
Hypogymnia physodes (L.) Nyl. 1,(2),3-11,13-16,18
H. tubulosa (Schaer.) Hav. 3,4,7-12,14-17
Hypotrachyna revoluta (Flörke) Hale 1,7,8,10,13-16
Lecanactis abietina (Ach.) Körb. 7,15
Lecania cyrtella (Ach.) Th.Fr. 4,8,10,11
L. erysibe (Ach.) Mudd 1-18
L. hutchinsiae (Nyl.) A.L.Sm. 17
L. inundata (Hepp ex Körb.) M.Mayrhofer 3,13
L. naegelii (Hepp) Diederich & Van den Boom 10
L. turicensis (Hepp) Müll.Arg. 5,10-12,14-17
Lecanora albescens (Hoffm.) Branth & Rostr. 1-18

L. campestris (Schaer.) Hue 1-18
L. carpinea (L.) Vain. 8
L. chlarotera Nyl. (2),3,7-13,15,17,18
L. conferta (Duby ex Fr.) Grognot 1-18
L. conizaeoides Nyl. ex Cromb. 1-18
L. crenulata Hook. 1-18
L. dispersa (Pers.) Sommerf. 1-18
L. epanora (Ach.) Ach. 7
L. expallens Ach. 1-18
L. hagenii (Ach.) Ach. 15
L. intricata (Ach.) Ach. 3-6,8,9,11,13-15
L. muralis (Schreb.) Rabenh. 1-18
L. orosthea (Ach.) Ach. 1-18
L. pannonica Szatala 2-11,13-18
L. polytropa (Hoffm.) Rabenh. 1-18
L. pruinosa Chaub. 18
L. pulicaris (Pers.) Ach. 7
L. rupicola (L.) Zahlbr. 7 [Records from 1 and 15 questionable]
L. saligna (Schrad.) Zahlbr. 2,4,6,15
L. soralifera (Suza) Räsänen 1-18
L. sulphurea (Hoffm.) Ach. 1,3,4,6-12,14,15,17,18
L. varia (Hoffm.) Ach. 10,15
Lecidea fuscoatra (L.) Ach. 1-14,16,17
L. hypopta Ach. 7
Lecidella carpathica Körb. 10,17,18
L. elaeochroma (Ach.) M.Choisy 1,(2),3,7,10,15,16
L. scabra (Taylor) Hertel & Leuckert 1-18
L. stigmatea (Ach.) Hertel & Leuckert 1-18
Lempholemma chalazanum (Ach.) de Lesd. 10
Lepraria incana (L.) Ach. 1-18 [Mostly s.lat.; numerous records referable to other *Lepraria* and *Leproloma* species]
L. lesdainii (Hue) R.C.Harris 2,7,8,10,17
L. lobificans Nyl. 2,3,5,6,8,9,13,16,18
[*Leproloma membranaceum* (Dicks.) Vain. Records from 3,10,14-16 questionable]
L. vouauxii (Hue) J.R.Laundon 1-18
Leproplaca chrysodeta (Vain. ex Räsänen) J.R.Laundon 2,3,5-18
Leptogium biatorinum (Nyl.) Leight. 3
L. schraderi (Ach.) Nyl. 8,11,16
Lichina confinis (Müller) C.Agardh 9
Lobaria pulmonaria (L.) Hoffm. _Loc.non cit._ in Lees (1892). [Extinct]
Melanelia elegantula (Zahlbr.) Essl. 14
M. exasperata (De Not.) Essl. _Loc.non cit._ in Lees (1892) [Extinct]
M. exasperatula (Nyl.) Essl. 15,17
M. fuliginosa (Fr. ex Duby) Essl. 1-5,7-14,16,17
ssp. _glabratula_ (Lamy) Coppins 1-11,13-16,18
M. subaurifera (Nyl.) Essl. 3-5,7-11,13-18
Micarea denigrata (Fr.) Hedl. 1,3,7,13,18
M. erratica (Körb.) Hertel, Rambold & Pietschm. 10,11
M. lignaria (Ach.) Hedl. 1,2,4,7,10,11,15,16
M. melaena (Nyl.) Hedl. 7
M. misella (Nyl.) Hedl. 5
M. nitschkeana (J.Lahm ex Rabenh.) Harm. 2,9
M. prasina Fr. 1-3,5,7,13,15,17
Mycoblastus fucatus (Stirt.) Zahlbr. 4,8-10,13,15,16
M. sterilis Coppins & P.James = *M. fucatus*
Mycoporum hippocastani (DC.) Coppins = *Cyrtidula hippocastani*
Myxobilimbia sabuletorum (Schreb.) Hafellner 1-18
Neofuscelia verruculifera (Nyl.) Essl. 3,7-13,16
Ochrolechia androgyna (Hoffm.) Arnold 3,7,10,15
O. parella (L.) A.Massal. 1,2,4,8,10,11,15
O. subviridis (Høeg) Erichsen 7
O. turneri (Sm.) Hasselrot 7,8,11,14-16
Opegrapha atra Pers. 10,18

O. calcarea **Turner ex Sm. 3-9,11-13,15-18** [As *O. chevallieri* Leight. in 4, 9, 11, 13 and 18]
O. demutata **Nyl. 11** [First British record]
O. gyrocarpa **Flot. 18**
O. niveoatra **(Borrer) J.R.Laundon 18**
O. parasitica **(A.Massal.) H.Olivier 4,10**
O. varia **Pers. 10**
O. vermicellifera **(Kunze) J.R.Laundon 8**
O. vulgata **(Ach.) Ach. 8,10,11**
Parmelia acetabulum (Necker) Duby = *Pleurosticta acetabulum*
P. caperata (L.) Ach. = *Flavoparmelia caperata*
P. elegantula (Zahlbr.) Szatala = *Melanelia elegantula*
P. exasperata De Not. = *Melanelia exasperata*
P. exasperatula Nyl. = *Melanelia exasperatula*
P. glabratula (Lamy) Nyl. = *Melanelia fuliginosa* subsp. *glabratula*
P. glabratula subsp. *fuliginosa* (Fr. ex Duby) J.R.Laundon = *Melanelia fuliginosa*
P. mougeotii Schaer. ex D.Dietr. = *Xanthoparmelia mougeotii*
P. perlata (Huds.) Ach. = *Parmotrema chinense* (Osbeck) Hale & Ahti
P. revoluta Flörke = *Hypotrachyna revoluta*
P. saxatilis **(L.) Ach. 1-16**
P. soredians Nyl. = *Flavoparmelia soredians*
P. subaurifera Nyl. = *Melanelia subaurifera*
P. subrudecta Nyl. = *Punctelia subrudecta*
P. sulcata **Taylor 1-18**
P. tiliacea (Hoffm.) Ach. = *Parmelina tiliacea*
P. ulophylla (Ach.) F.Wilson = *Punctelia ulophylla*
P. verruculifera Nyl. = *Neofuscelia verruculifera*
Parmelina tiliacea **(Hoffm.) Hale 8,10**
Parmeliopsis ambigua **(Wulfen) Nyl. 3,5,7,8,15,16**
Parmotrema chinense **(Osbeck) Hale & Ahti *Loc. non cit.* in Lees (1892)** [Extinct]
Peltigera canina **(L.) Willd. 9**
P. didactyla **(With.) J.R.Laundon 2,3,5,10,11,15,16**
P. hymenina **(Ach.) Delise ex Duby 2,3,7,9,(10),11,15**
P. lactucifolia (With.) J.R.Laundon = *P. hymenina*
P. membranacea **(Ach.) Nyl. 1-3,5,7,9,(10),11,12,(13),14,(15),16**
P. neckeri **Hepp ex Müll.Arg. 9** [Last seen in 1931; ? extinct]
P. praetextata **(Flörke ex Sommerf.) Zopf (9),12**
P. rufescens **(Weiss) Humb. 1,2,5-7,9-11,14,16**
Pertusaria albescens **(Huds.) M.Choisy & Werner 3,4,7,8,15**
var. *corallina* (Zahlbr.) J.R.Laundon 3,7,8,10,11,15,16
P. amara **(Ach.) Nyl. (2),3,6-11,13-18**
P. coccodes **(Ach.) Nyl. 7,8,10,15**
P. pertusa **(Weigel) Tuck. 3,4,7,8,10,15,16**
Petractis clausa **(Hoffm.) Kremp. 3,8,10,11**
Phaeophyscia nigricans **(Flörke) Moberg 1-11,13-18**
P. orbicularis **(Neck.) Moberg 1-18**
Phlyctis argena **(Spreng.) Flot. 1-4,7-12,14-16,18**
Physcia adscendens **(Fr.) H.Olivier 1-18**
P. aipolia **(Ehrh. ex Humb.) Fürnr. *Loc.non cit.* in Lees (1892)** [Extinct]
P. caesia **(Hoffm.) Fürnr. 1-18**
P. dubia **(Hoffm.) Lettau 2-18**
P. leptalea **(Ach.) DC. *Loc.non cit.* in Lees (1892)** [Extinct/? doubtful]
P. stellaris **(L.) Nyl. 3** [*Loc.non cit.* in Lees (1892), doubtful in the absence of supporting herbarium material]
P. tenella **(Scop.) DC. 1-18**
Physconia distorta **(With.) J.R.Laundon 11,15**
P. enteroxantha **(Nyl.) Poelt 8,10,11,15,18**
P. grisea **(Lam.) Poelt 1-18**
P. perisidiosa **(Erichsen) Moberg 10,11**
Placynthiella dasaea **(Stirt.) Tønsberg 5**
P. icmalea **(Ach.) Coppins & P.James 1-16,18**
P. uliginosa **(Schrad.) Coppins & P.James 1,2,5-7,10,11,16**
Placynthium nigrum **(Huds.) Gray 1-18**
Platismatia glauca **(L.) W.L.Culb. & C.F.Culb. 2-4,7,10,15,16**

Plate 1 Badgers are not unusual in Lincolnshire but are found in more marginal habitats (page 2)

Photo Geoff. Trinder

Plate 2 'Slides' on riverbanks are a good sign of otter presence (page 5)

Photo Environment Agency

Plate 3 Otters are now making a comeback on Lincolnshire's main rivers (page 6)
Photo Environment Agency

Plate 4 The decline of otters provided a ready made niche for the American mink to move into after escaping from fur farms (page 6)
Photo Howard Hillier

Plate 5 Road casualties have provided the greatest proportion of records to show the status of polecat across the UK (page 10) Photo Paul Glendell/ English Nature

Plate 6 Stoats have adapted to specialise in taking rabbits as prey but are not restricted by their availability (page 12) Photo Alan Dale

Plate 7 A weasel *Mustela nivalis ssp. vulgaris*. National census returns suggest that both weasels and stoat populations may be in decline in the UK – is this the case in Lincolnshire? (page 12)

Photo Derek Robinson/ Lincolnshire Wildlife Trust

Plate 8 A leaf-cutter bee, *Megachile* sp, Crowland (page 15). Photo Roger Key

Plate 9 Great horsetail *Equisetum telmateia*, Boothby Grange (page 44).
Photo Irene Weston

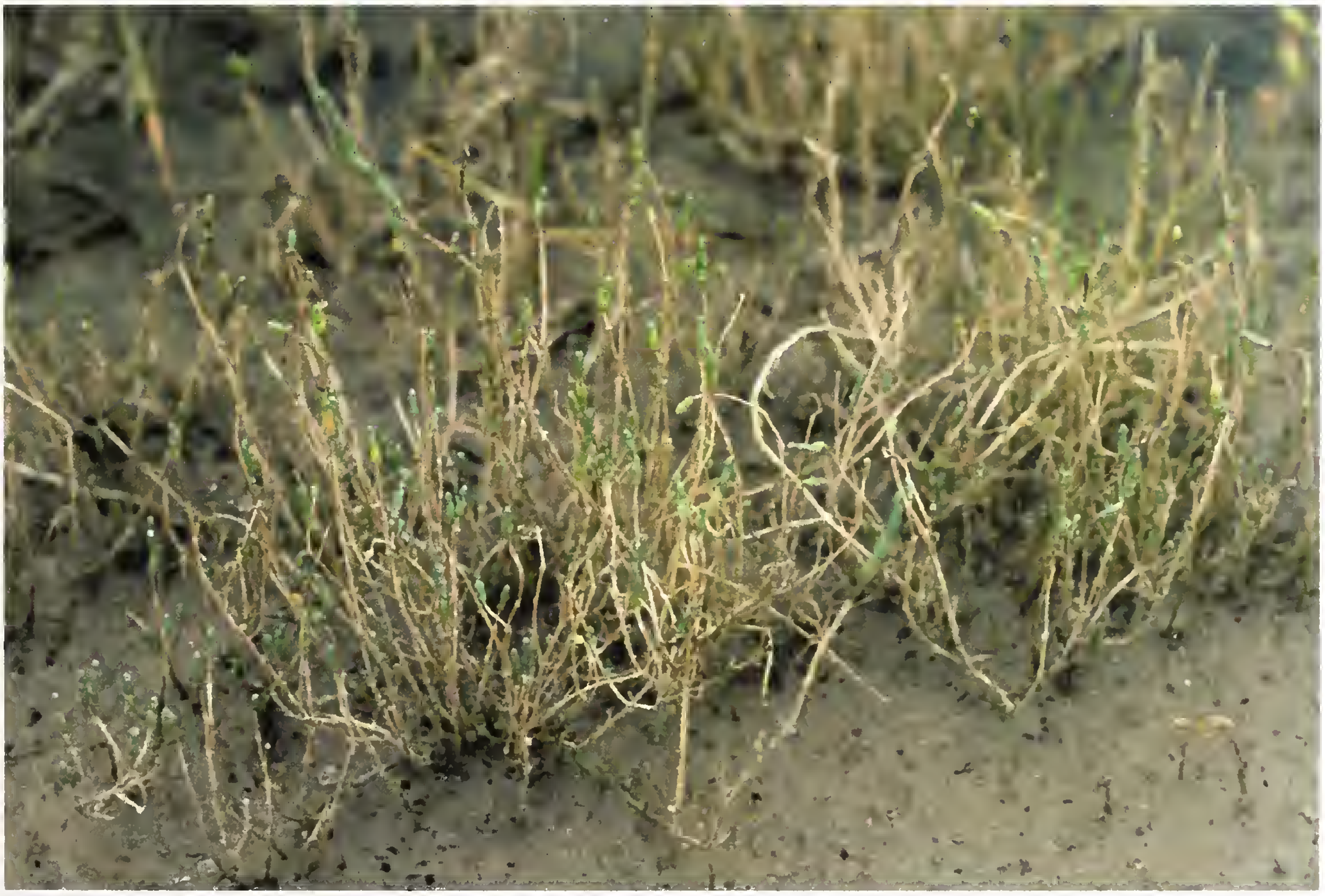

Plate 10 Perennial glasswort *Sarcocornia perennis* rediscovered at its most northerly station in Britain (Gibraltar Point) in 2003 and showing its rhizomatous growth form (page 44).
Photo Nick Tribe

Plate 11 Oxgangs House Spring provided the first Lincolnshire record of the nationally notable caseless caddis *Hydropsyche fulvipes* (page 49). Photo Richard Chadd

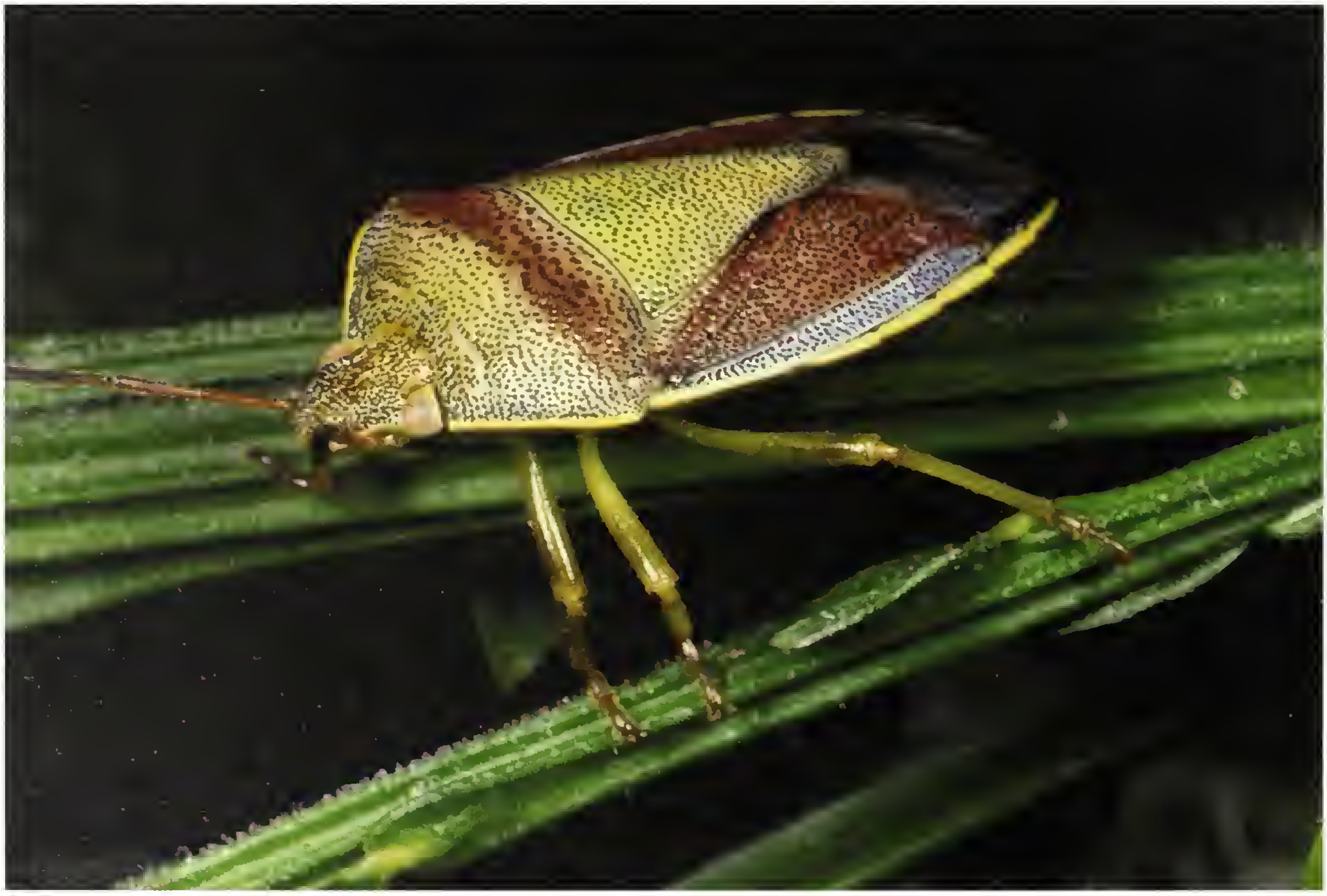

Plate 12 Gorse shieldbug (*Piezodorus lituratus),* widespread but overlooked (page 50). Photo Roger Key

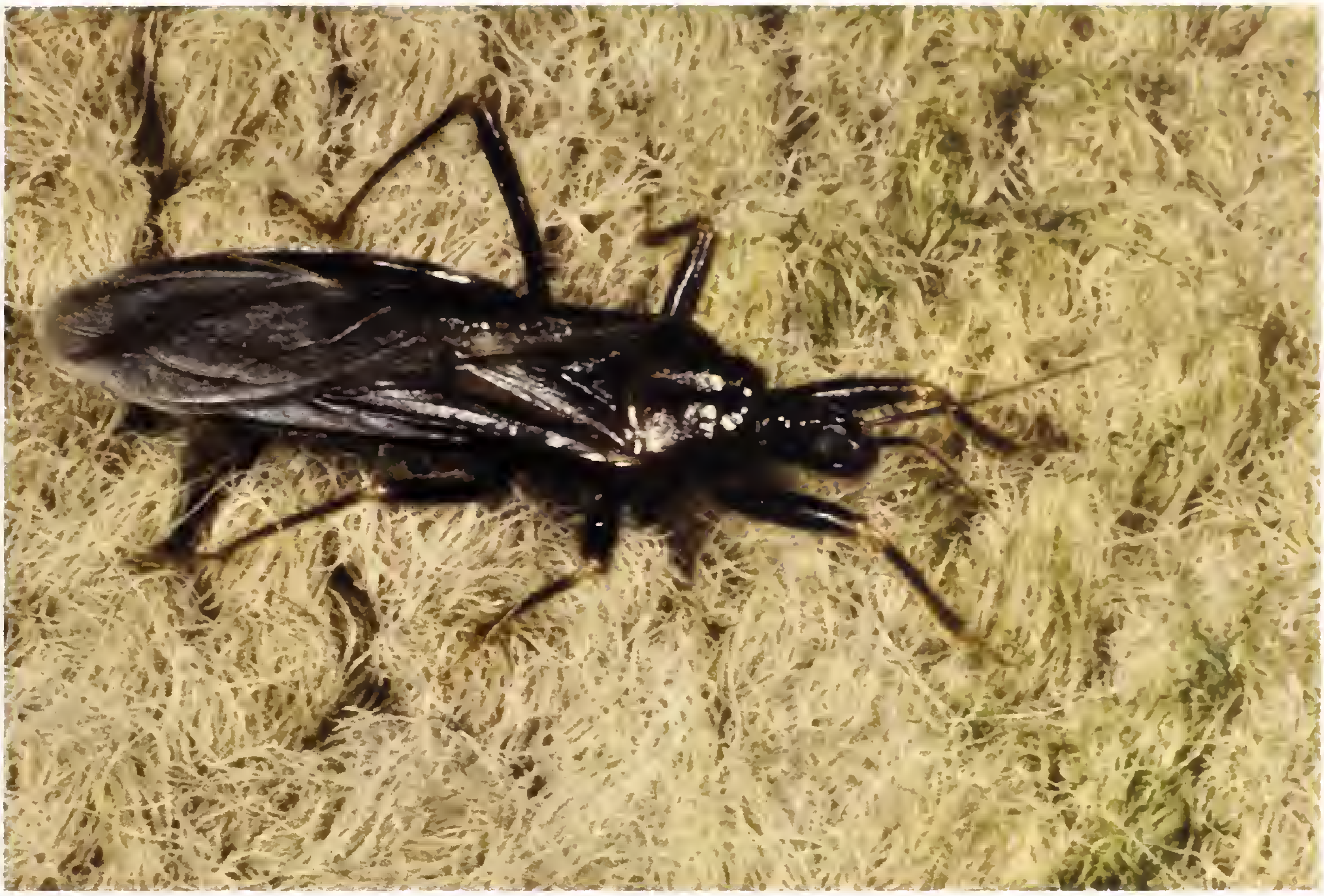

Plate 13 The fly bug *Reduvius personatus*, a predator of silverfish, booklice and bedbugs (page 50).
Photo Roger Key

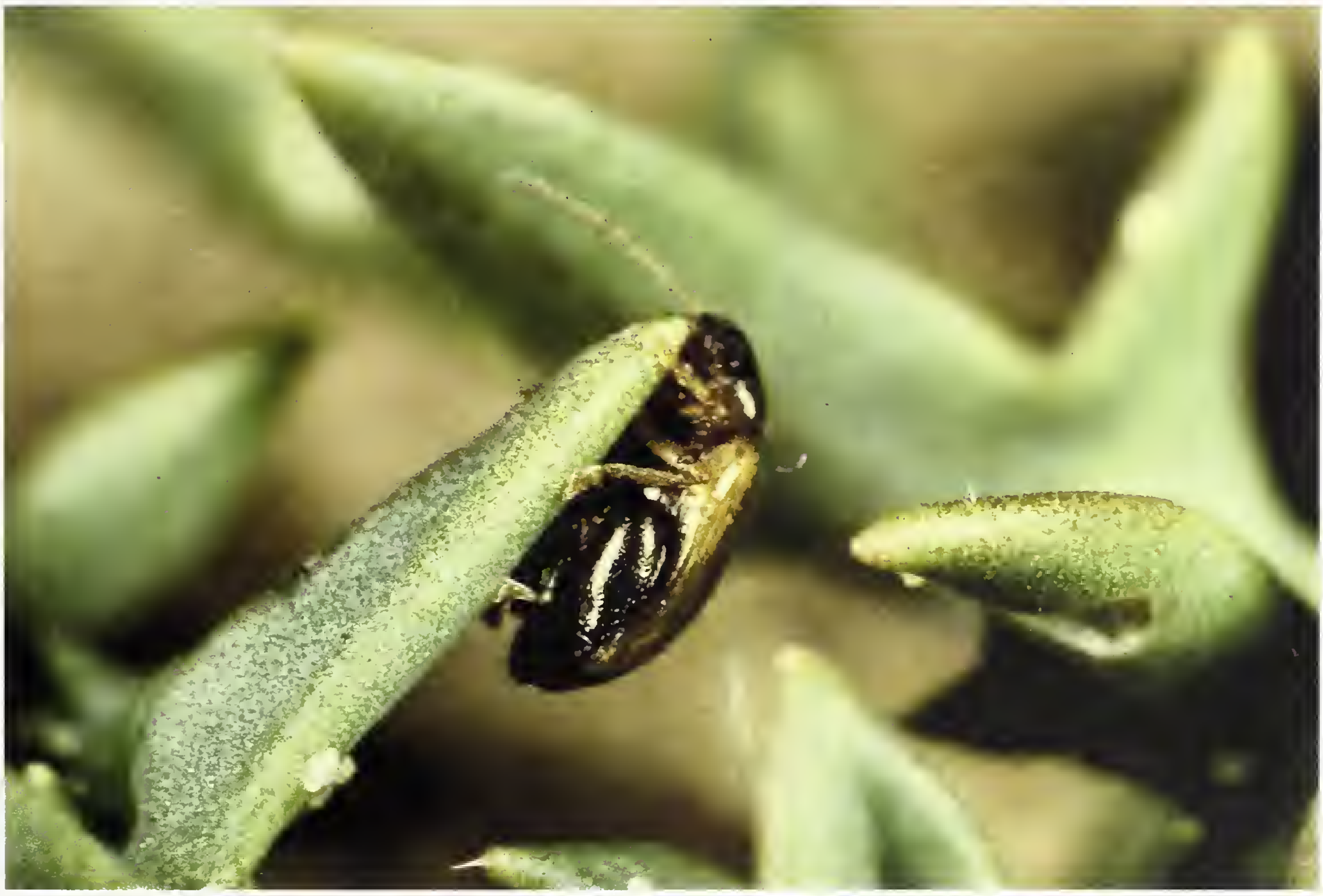

Plate 14 The flea beetle *Psylliodes marcida*, abundant on sea rocket at Gibraltar Point (page 55).
Photo Roger Key

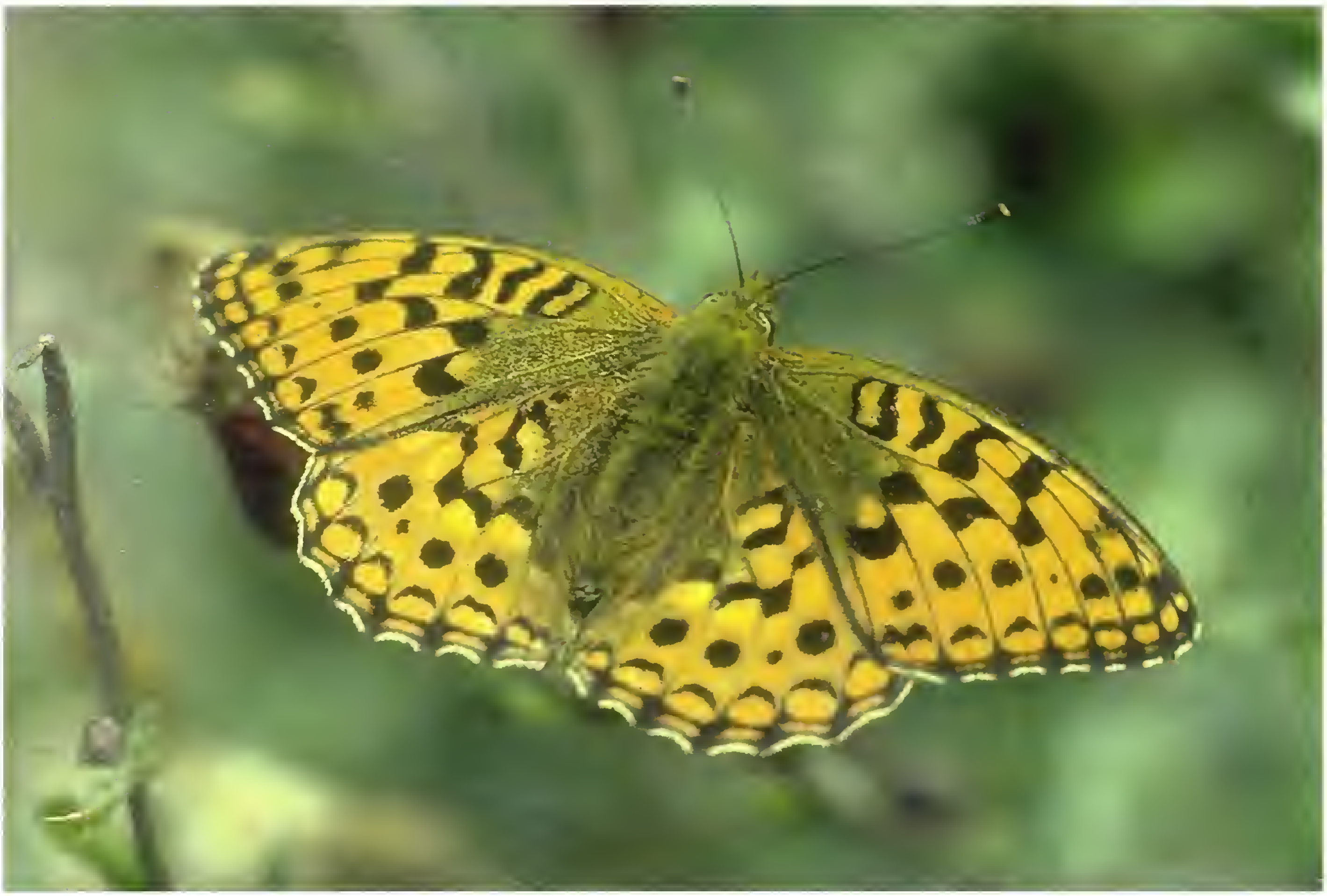

Plate 15 Dark green fritillary *Argynnis aglaja* ; a migrant from Norfolk? (page 57).
Photo Roger Key

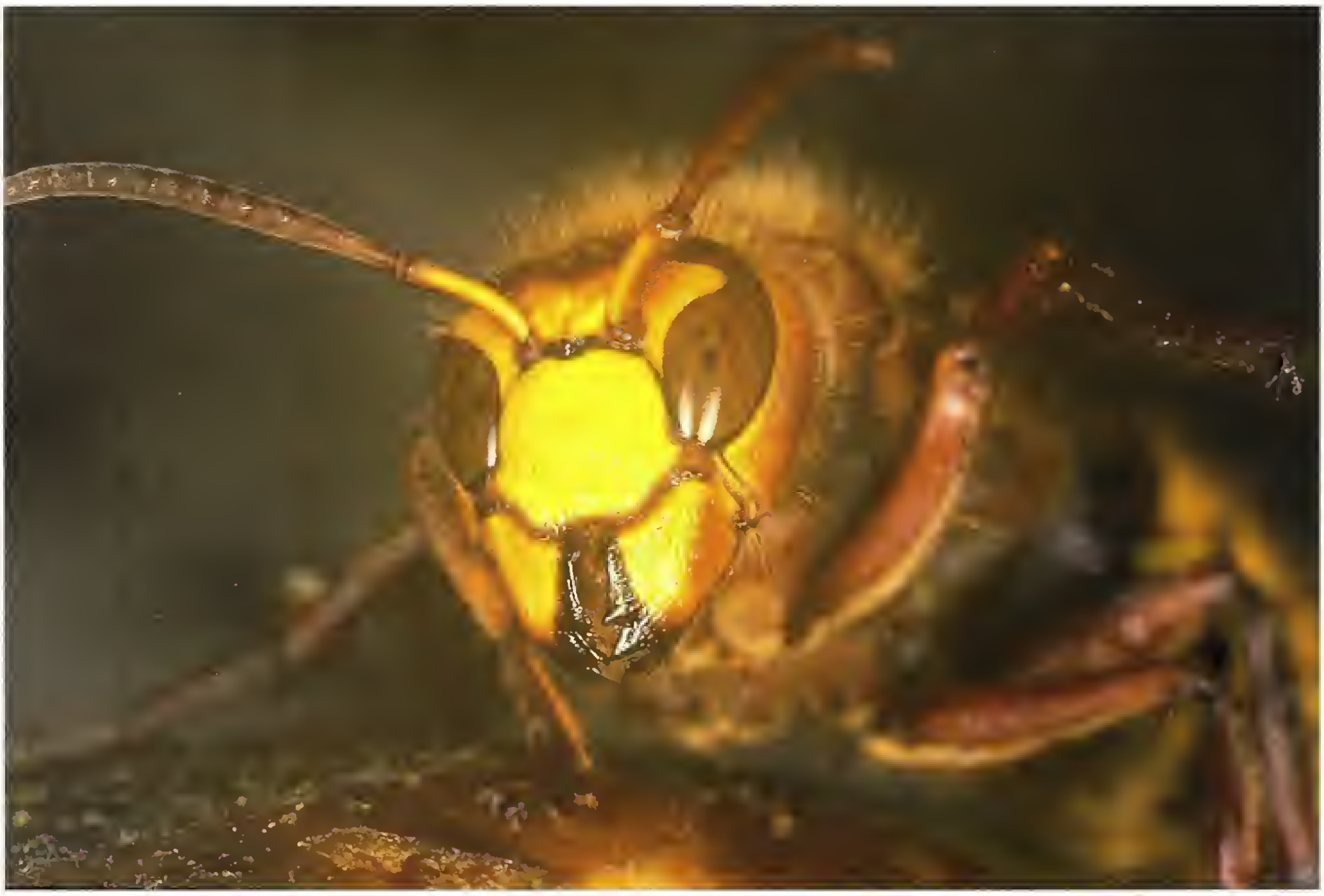

Plate 16 The hornet *Vespa crabro* (page 60). Photo Roger Key

Pleurosticta acetabulum (Neck.) Elix & Lumbsch 11
Polyblastia dermatodes A.Massal. 3,10,11
P. gelatinosa (Ach.) Th.Fr. = *Agonimia gelatinosa*
Polysporina simplex (Davies) Vězda 10,11,14,17
Porpidia crustulata (Ach.) Hertel & Knoph 2-6,8-10,15
P. macrocarpa (DC.) Hertel & A.J.Schwab 1,5,7,16
P. soredizodes (Lamy ex Nyl.) J.R.Laundon 1-18
P. tuberculosa (Sm.) Hertel & Knoph 1-18
Protoblastenia rupestris (Scop.) J.Steiner 1-3,5-18
Protoparmelia badia (Hoffm.) Hafellner 1-3,7,15
Pseudevernia furfuracea (L.) Zopf 3,4,7,10,11 [s.lat. – some/all records referable to var. *ceratea*]
var. _ceratea_ (Ach.) D.Hawksw. 13
Psilolechia leprosa Coppins & Purvis 1-8,10,11,13-18
P. lucida (Ach.) M.Choisy 1-18
Punctelia subrudecta (Nyl.) Krog 2-5,7-18 [Many records referable to *P. ulophylla*]
P. ulophylla (Ach.) Herk & Aptroot 8,10,15,16
Pyrenocollema halodytes (Nyl.) R.C.Harris 3
Pyrrhospora quernea (Dicks.) Körb. 7,9,11
Ramalina calicaris (L.) Fr. (7) [Extinct]
R. canariensis J.Steiner 9,11,12,18
R. capitata (Ach.) Nyl. 7 [First modern record for Britain; first record for England]
R. farinacea (L.) Ach. 2-16,18
R. fastigiata (Pers.) Ach. (2),(6),10,11 [Possibly also in 16]
R. fraxinea (L.) Ach. 7,9,10,(13),(15)
R. lacera (With.) J.R.Laundon 11
R. pollinaria (Westr.) Ach. (1),10,11 [Old record from 1 doubtful in the absence of supporting herbarium material]
R. subfarinacea (Nyl. Ex Crom.) Nyl. 10
Rhizocarpon geographicum (L.) DC. 1,10
R. reductum Th.Fr. 1-18
Rinodina calcarea (Arnold) Arnold 10,12,14,15,17,18
R. exigua Gray = *R. oleae*
R. gennarii Bagl. 1-18
R. oleae Bagl. 1,7,10,11,15,17
R. pityrea Ropin & H.Mayrhofer 3
R. teichophila (Nyl.) Arnold 1-18
Sarcogyne regularis Körb. 1-10,12-18
Sarcopyrenia gibba (Nyl.) Nyl. 9,10,13,14,15,17
Schismatomma decolorans (Turner & Borrer ex Sm.) Clauzade & Vězda 10,15,16,18
Scoliciosporum chlorococcum (Graewe ex Stenh.) Vězda 1-13,15,16,18
S. umbrinum (Ach.) Arnold 1-18
Solenopsora candicans (Dicks.) J.Steiner 10,11,14,16,17
Solorina saccata (L.) Ach. (2) [Extinct]
Staurothele hymenogonia (Nyl.) Th.Fr. 3,10
Steinia geophana (Nyl.) Stein 8
Stereocaulon nanodes Tuck. 12
S. pileatum Ach. 10,13
S. vesuvianum Pers. 10,16
Tephromela atra (Huds.) Hafellner ex Kalb 1-18
Thelidium decipiens (Nyl.) Kremp. 10
T. incavatum Mudd 7,11,17,18
T. papulare (Fr.) Arnold 17
T. zwackhii (Hepp) A.Massal. 3,8,10,11
Thelocarpon laureri (Flot.) Nyl. 2
Toninia aromatica (Sm.) A.Massal. 1,3-18
Trapelia coarctata (Sm.) M.Choisy 1-10,12-18
T. involuta (Taylor) Hertel 1-11,13,15,18
T. obtegens (Th.Fr.) Hertel 2-4,6,10,14
T. placodioides Coppins & P.James 1-18
Trapeliopsis flexuosa (Fr.) Coppins & P.James 1,2,7,10,15
T. granulosa (Hoffm.) Lumbsch 1-11,13-16,18
Tuckermannopsis chlorophylla (Willd.) Hale 2-4,7,8,10,15

Usnea ceratina Ach. **(15)** [Extinct]
U. cornuta Körb. **16**
U. cf. *filipendula* Stirton **(13)** [Extinct/doubtful]
U. hirta (L.) F.H.Wigg. **(15) - in Nichols (1795); also** *loc.non cit.* **in Lees (1892)** [Extinct]
U. subfloridana Stirt. **3-5,7,10,11,13-16**
Verrucaria aethiobola Wahlenb. **16**
V. baldensis A.Massal. **2-8,10-18**
V. caerulea DC. **18**
V. ditmarsica Erichsen **3**
V. dolosa Hepp **8,11**
V. glaucina auct. **1-18**
V. hochstetteri Fr. **1-18**
V. macrostoma Dufour ex DC. **1,3-18**
f. *furfuracea* de Lesd. **1-18**
V. muralis Ach. **10-18**
V. murina Leight. **3,8,11**
V. nigrescens Pers. **1-18**
V. simplex P.M.McCarthy **15**
V. viridula (Schrad.) Ach. **1-18**
Vezdaea leprosa (P.James) Vězda **10**
Xanthoparmelia mougeotii (Schaer. ex D.Dietr.) Hale **2-4,6-8,10-18**
Xanthoria calcicola Oxner **1-18**
X. candelaria (L.) Th.Fr. **1-18**
X. elegans (Link) Th.Fr. **3,7,9,13,15,16,17**
X. parietina (L.) Th.Fr. **1-18**
X. polycarpa (Hoffm.) Th.Fr. ex Rieber **1-18**
X. ucrainica S.Kondratyuk **2,3,7,10,13,15,16**

Summary

The Lincolnshire lichen flora can be summarized as follows: 313 taxa have been recorded from Lincolnshire, of which 13 have not been seen for more than 100 years; a further 4 recorded taxa are doubtful in the absence of supporting herbarium material.

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LINCOLNSHIRE NATURAL HISTORY IN 2003

WEATHER 2003

Roger Key, John Walker, Phil Porter

2003 was yet another unusual year. January started wet, continuing after the long wet autumn and early winter. The first snow of the winter was a light dusting on 4th January, followed by only a short cold spell and then continuing mild and wet. Overall it was a very wet, but also sunny winter, with standing water all across the fens at the same time as having the record for the sunniest January and March on record and the sunniest February for 50 years. There was a spectacular blizzard in eastern England at the end of January and early February, with south Lincolnshire hard hit.

There was a run of very warm sunny weather in April; three successive days broke temperature record for the month, up into the mid 70s° F and apparent drought conditions soon followed, with deep soil cracks. This drought was, however, short lived and broke with heavy rain at end of month.

May and June were warm and showery and then in July a very prolonged, extremely hot dry spell began which continued through until November, producing severe drought conditions, particularly after August which was the hottest on record, with the hottest temperatures ever recorded in Britain (over 100°F). Autumn was the driest since the 1950s. The first frosts were quite early - in the first half of October, but it remained dry until late November when mild, very wet weather began again and continued through to the New Year.

Rainfall figures for 2003

Lincoln (mm) (1998-2001 not fully recorded therefore excluded)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
1950-2003 mean	50.6	39	43.5	40.8	44	48.3	53.1	59.8	48.2	47	56.7	54.4	585.7
2003	55.6	17.2	10.2	23.6	50	95.6	52.9	13.1	21.8	39.5	47.2	63.1	498.8

Saltfleetby-Theddlethorpe National Nature Reserve (mm)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1993-2003 mean	56.6	37.6	33.4	45.2	43.3	47.9	46	49.9	60.2	64.2	66.4	61.7	612.4
2003	62	36	24	18	40	67	68	21	19.5	32	69	40	496.5

ACKNOWLEDGEMENTS OF RECORDS

As ever, the county recorders thank the many individuals who were kind enough to submit records. Many individuals submit records for more than one group and to eliminate duplication, (hopefully) all are listed below.
V. Adams, M.E. Archer, Annette Binding, Allan Binding, K. Bradshaw, A. Brackenbury, J. Bratten, H. Britten, A. Brownlow, B. Bushby, J.W. Carr, A. Faulkner, C. Faulkner, C.F. George, A. Godfrey, M.W. Graham, N.C. Harris, Z. Harris, B. Hedley, D.S. Hill, W.G. Hoff, P. Jackson, H.P Jones, P. Kendal, H.W. Kew, R.S. Key, P. Kirby, D. Knight, R. Labett, J. Lamin, N. Lamming, J. Lazenby, J. Ostler, P. Porter, K. Robertson, K.E. Rowland, G. Standring, C. Smith, M. Tyskca, R.W.J. Uffen, J. Walker, I. Weston and V. Wilkin.

FUNGI

Ken Rowland

Mycologically speaking, the year 2003 has been disastrous. Therefore this report will be short and sweet. Weather conditions did not suit the fungi, being wet in June and July and then very dry in August, September and October, the reverse of the conditions they require. Many species did not bother to fruit this year and who can blame them when the fruiting bodies are 90-95% water? Why use scarce resources to do something that is not absolutely essential when next year could be much better?

Many of the mycorrhizal species were very scarce and late in appearing. Others that did were the saprophytic species growing on old stumps. Presumably the stumps retained sufficient moisture for the fungi to carry on.

Due to the dry conditions and other reasons, I only managed to attend one outdoor meeting this year. That was the Fungus Foray at Temple Wood which turned out to be, I think, the most unproductive LNU Foray I have ever attended with only 55 species recorded. Of these 27 were new site records, mainly due to under-recording at the wood. The weather conditions favoured the powdery mildews, one of which *Phyllactinia fraxini* on ash *Fraxinus excelsior* leaves was one of three new county records. The other two were among 24 different species of powdery mildews I recorded elsewhere during the year; *Erisyphe syringae* on lilac *Syringa* in my garden and *Microsphaera ornata* on birch *Betula* at Swanholme. Another new county record was *Phragmidium ribi-idea*, a rust, which we found on wild raspberries *Rubus idaeus* at Gibraltar Point.

It was not a good year for the larger fungi. Altogether I have only 620 records to date which is less that half of what I would normally expect to find or receive. Even on the Forays I have led for other organisations, results have been only about a third of what I would expect, and during a visit to Bradley Wood, Grimsby, at the end of September, not one agaric fungus was in evidence. All in all a very disappointing season.

After some subsequent rain into mid- to late December, some of the lawn species were appearing such as *Marasmius oreades* and *Galerina mniophila* on the moss in my lawn as late as Christmas Day. A further two new county records were *Enteridium intermedium*, a myxomycete collected by Colin Faulkner growing on an old wooden pallet on his allotment and *Ramularia spheroidea* brought to me by Phil Porter from Whisby Nature Park, found on common bird's-foot trefoil *Lotus corniculatus* leaves.

MOSSES, LIVERWORTS AND LICHENS

Mark Seaward

Almost all of the bryophyte records, including one vice-county (*Bryum violaceum*) and 21 divisional records as indicated below, were provided by Frank Lammiman and Christine Rieser. Of particular note was the rediscovery (by Dr D. Holyoak at Rimac) of the nationally rare moss, *Bryum warneum* (Röhl.) Blandow ex Brid., last seen in the county in 1932 and thought to have disappeared as a consequence of the 1953 floods. Hopefully this find will provide the precursor to the rediscovery of several other coastal rarities last seen in Lincolnshire more than 50 years ago. Atmospheric amelioration continues, particularly in respect of sulphur dioxide pollution, as reflected in the increasing number of records of epiphytic bryophytes such as *Cryphaea heteromalla, Orthotrichum* spp. and *Ulota* spp., but, on the downside, other recently established bryophyte and lichen communities bear witness to increasing hypertrophication.

As regards the county's lichen flora, two new county (*Physcia stellaris*, *Ramalina subfarinacea*), one new vice-county (*Flavoparmelia soredians*), 37 divisional and innumerable grid square records were added to our registers this year. A further 30 churches were investigated by the author in 2003 as part of the British Lichen Society's churchyard survey; to date, 395 (c. 58%) of an estimated 676 C. of E. churches in the county have been researched, as a consequence of which further habitats providing refugia for some rare species, such as *Ramalina capitata* (Ach.) Nyl. (now found in 7 Lincolnshire churchyards), have been discovered.

The following moss and liverwort records were contributed by F.R. Lammiman and C. Rieser and the lichen records by the author in 2003, unless otherwise indicated; additional grid records of bryophytes were provided by D. Holyoak, P. Kirby and C.R. Stevenson. The author is most grateful to Dr B.J. Coppins, Royal Botanic Garden, Edinburgh, for his identification/confirmation of the more critical lichen material. The nomenclature is according to T.L. Blockeel and D.G. Long (1998) *A Check-list and Census Catalogue of British and Irish Bryophytes* and to B.J. Coppins (2002) *Checklist of Lichens of Great Britain and Ireland.*

Mosses

Brachythecium mildeanum (Schimp.) Schimp. ex Milde + 8
B. rivulare Bruch, Schimp. & W.Gümbel + 5
Bryum bicolor Dicks. + 6
B. subelegans auct. + 12
B. violaceum Crundw. & Nyholm + 3 (S.Ferriby, 2003, F.R.Lammiman & C.Rieser, **VCR**)
Campylopus introflexus (Hedw.) Brid. + 12
Fissidens dubius P.Beauv. + 11
F. incurvus Starke ex Röhl. + 12
Microbryum davallianum (Sm.) R.H.Zander + 3
Orthotrichum lyellii Hook. & Taylor + 8
O. pulchellum Brunt. + 5, 10
Palustriella commutata (Hedw.) Ochyra + 10
Plagiomnium affine (Blandow) T.J.Kop. + 11
Plagiothecium succulentum (Wilson) Lindb. + 8
Pseudocrossidium hornschuchianum (Schultz) R.H.Zander + 13
Schistidium crassipilum H.H.Blom + 16(on oolite tomb, Crowland Abbey, 2002,C.R.Stevenson, NCR)
Syntrichia ruraliformis (Besch.) Cardot + 10
S. virescens (De Not.) Ochyra + 8 (only the second record for Lincs.)
Ulota bruchii Hornsch. ex Brid. + 5, 10
U. crispa (Hedw.) Brid. + 5

Liverworts

Calypogeia fissa (L.) Raddi + 8
Cephalozia connivens (Dicks.) Lindb. + 8

Lichens

Acarospora smaragdula (Wahlenb.) A.Massal. + 8
Belonia nidarosiensis (Kindt) P.M.Jørg. & Vězda + 7
Buellia ocellata (Flot.) Körb. + 15 (CJBH 1999)
Caloplaca flavocitrina (Nyl.) H.Olivier + 13
C. ruderum (Malbr.) J.R.Laundon + 16
Cliostomum griffithii (Sm.) Coppins + 3
Collema auriforme (With.) Coppins & J.R.Laundon + 10
C. fuscovirens (With.) J.R.Laundon + 10
Flavoparmelia soredians (Nyl.) Hale + 10 (single thallus on wooden fence rail, Hagworthingham, 2003, MRDS, **VCR**; only the second record for Lincs.)
Haematomma ochroleucum var. *porphyrium* (Pers.) J.R.Laundon
Hypogymnia tubulosa (Schaer.) Hav. + 16
Hypotrachyna revoluta (Flörke) Hale + 10
Lecanora chlarotera Nyl. + 3
L. sulphurea (Hoffm.) Ach. + 6
Lecidella elaeochroma (Ach.) M.Choisy + 3, 7, 16
Lepraria lesdainii (Hue) R.C.Harris + 10
L. lobificans Nyl. + 16
Micarea lignaria (Ach.) Hedl. + 10
M. prasina Fr. + 2
Mycoblastus fucatus (Stirt.) Zahlbr. + 9, 10, 16

Ochrolechia androgyna (Hoffm.) Arnold + 10
Physcia stellaris (L.) Nyl. + 3 (on *Sambucus*, Elsham, 2003, MRDS, **NCR**; an old unlocalised record for VC 54 in Lees is not supported by herbarium material)
Polyblastia dermatodes A.Massal. + 3
Pseudevernia furfuracea (L.) Zopf + 10
Punctelia ulophylla (Ach.) Herk & Aptroot + 9, 10, 16
Ramalina pollinaria (Westr.) Ach. + 10 (2002, MRDS; only the second modern record for Lincs.)
R. subfarinacea (Nyl. ex Cromb.) Nyl. + 10 (on siliceous gravestones, West Keal church, 2002, **NCR**; an uncommon lichen in eastern England and the first record for Lincs.)
Rhizocarpon geographicum (L.) DC. + 10 (only the second record for Lincs.)
Rinodina oleae Bagl. + 15
Staurothele hymenogonia (Nyl.) Th.Fr. + 3 (only the second record for Lincs.)
Trapelia obtegens (Th.Fr.) Hertel + 10
Tuckermannopsis chlorophylla (Willd.) Hale + 8
Verrucaria murina Leight. + 3
Xanthoria ucrainica S.Kondratyuk + 3, 16

BOTANICAL REPORT

Irene Weston

Records from Field Meetings

Eight Field Meetings were held in 2003. The following are highlights from the lists.

Boothby Grange, Welton-le-Marsh. TF46.
Equisetum telmateia (plate 10) dominated the wet woodland and was a serious weed in the cereals. IW

Risby Warren. SE91
Though not new records, the following species indicate the range of plants found in the sandy and limestone patches. – *Ammophila arenaria, Hypochaeris glabra, Vulpia ciliata* subsp. *ambigua, Teesdalia nudicaulis, Calluna vulgaris, Brachypodium pinnatum, Astragalus danicus, Hydrocotyle vulgaris*, 140 plants recorded. PK, NL, BH

Frieston Shore. TF44.
Ruppia sp., *Ranunculus baudotti, Hordeum marinum, Puccinellia distans* in its true maritime habitat rather than as a roadside halophyte, *Chenopodium ficifolium* which is much more common in the south of the county. PK, AF, ZH

Harlaxton Hall. SK83
Equisetum telmateia, Tilia platyphyllos, Poa nemoralis, Impatiens parviflora, Clematis vitalba, Campanula latifolia and *Mimulus moschatus*. Also from the nearby arable field a good range of weed species including *Chaenorhinum minus, Anthemis cotula, Spergularia arvensis, Aethusa cynapium* and *Legousia hybrida*. PK, VW, ZH

Temple Wood. TF02
Six ferns were recorded from a gully. *Phyllites scolopendrium, Dryopteris affinis, D. felix-mas, D. carthusiana, D. dilatata, Polysticum aculeatum*. Also recorded were *Tilia cordata, Acer campestre, Cornus sanguinea* and *Hypericum humifusum*. PK, NH, ZH, A & CF

Records of Note 2003.

One of the finest records of 2003, perennial glasswort *Sarcocornia perennis* syn. *S. radicans, Arthrocneum perenne* was recorded at Gibraltar Point by Colin Hutchinson, confirmed PK (plate 9). This is now the most northerly extant record for the species in Great Britain. In the new Atlas 2002 and in 'Scarce Plants of Britain' 1994 it was shown as extinct here and further north. Simon Leach in both these publications states that 'At many of its current localities it occurs in small fragmentary stands or as just a few scattered bushes'. This suggests that it could be present but undetected in some of the squares for which there are only old records.

Records from further north in Great Britain were from East Lothian VC82 and North East Yorkshire VC62 at Coatham Marshes, south of the Tees. Stace confirms these in the 'New Vice County Census Catalogue of Vascular Plants of Great Britain' 2003. There is also an entry in the Flora of Durham VC66 from 1917. The Lincolnshire. Flora lists *S. perennis* in Div. 12 1919 north of Boston, (Newman and Walworth). This record is marked as extinct at Gibraltar Point in the New Atlas and in Scarce Plants.

In 2003 *Salicornia pusilla*, single flowered glasswort, was recorded at Gibraltar Point, IW, PK, ZH and also from Donna Nook, PK, another northern limit plant and also a scarce British plant. *Salicornia pusilla x ramossissima* was also recorded from Gibraltar Point, IW, PK, VW, ZH and from Donna Nook PK.

A record of *Poa bulbosa* was received from Brian Laney and Paul Stanley (Northants) from Skegness TF 56 – new to the area.

Phil Porter sent in records from Whisby N.R. SK96 from a meeting he led for the Bradford Botany Group in July 2003. Their secretary Mr. Geoffrey Wilmore listed 266 species which reflects on the versatility and richness of the reserve. Notable records include *Anacamptis pyramidalis*, new to the reserve; *Trifolium micranthum*, also new to the reserve and overlooked and under-recorded in the county; *Gnaphalium sylvaticum*, plentiful in the Whisby complex but scarce in Great Britain; *Pilularia globulifera, Lythrum portula, Ranunculus hederaceus, Potamogeton trichoides, Eleocharis acicularis*, two Evening primrose species, *Oenothera x fallax* and *O. glazioviana*, *Salix repens, Artemisia absinthium* and penny royal *Mentha pulegium*. The Bradford list also includes other hybrid species, *Hypericum x desetangsii*, Des Etangs' St. John's wort, (*H. perforatum* x *H. maculatum), Rumex x pratensis, (R. crispus x R. obtusifolius), Rumex x dufftii, (R. sanguineus* x *R. obtusifolius)* and *Crataegus x media*, (*C. monogyna x C. laevigata*). PP also recorded *Rumex hydrolapathum*, a species introduced into the reserve in 1993, now established.

Records sent in by Keith Robertson include *Ophrys apifera*, 39 flowering plants, and *Acaena nova-zelandii* from Kirkby on Bain pits TF26. *Dactylorhiza praetermissa*, about 670 flowering spikes plus hybrids with *D. fuchsii* and about 140 plants of *D. fuchsii* all from Tattershall Pits TF 25. Unfortunately the latter were bulldozed out later in the season. He recorded *Campanula trachelium* from Fulsby Wood TF26 and *Nymphoides peltata* from Haconby Lock TF36 and Stickford TF25 and 36.

David Knight has added substantially to his lists from Skellingthorpe and district SK87 and 97. *Carex pallescens, C. remota, C. binervis, Berula erecta, Valeriana dioica, Ranunculus auricomis* and *Lamiastrum galeobdolon* were new records for him.

Neil Harris has re-recorded *Allium oleraceum* and *Orobanche rapum-genistae* from their only site in the county. *A. oleraceum* was recorded first recorded here in 1842 and the

Orobanche in first recorded in 1894. They are regularly monitored at this site in Laughterton VC54 and it was good to have confirmation in 2003.

Clifford Jukes has refound *Hottonia palustris* after a long absence from Tetney Blow Wells. In 2003 a population with 14 flowering heads was recorded.

John Redshaw has re-recorded *Sium latifolium* and *Stellaria palustris* after a long absence from Baston Fen Nature Reserve TF11 and *Lysimachia vulgaris* which is new to the reserve. Also *Crassula helmsii* from Deeping Lakes TF10 and *Lemna gibba* in profusion at Pinchbeck Slipe TF12.

On several visits to the River Trent Banks our regular recording group PK, VW, ZH and IW have recorded *Angelica archangelica* and *Oenanthe crocata* along long stretches of the river. Records from Burringham, Ouston Ferry, East Ferry and Althorpe indicate that these often grow together. The *Angelica* was also recorded at Derrythorpe.

Brassica elongata ssp. *integrifolia* was recorded at Minting TF17, confirmed by T. Rich, the Crucifer referee. The group recorded a splendid row of *Ulmus minor* and *Carex divulsa* ssp. *divulsa* IW, PK also at Minting.

Records from PK and VW include *Crassula helmsii* and *Eriophorum angustifolium* from the large pit at Gainsthorpe Road, Hibaldstow; *Papaver argemone* on the footpath to Briggate Farm SE90; *Carex viridula* ssp. *brachyrhyncha,* Manton Fishponds SE90; *Calystegia x howittiorum* Burringham and Althorpe SE80; *Triglochin palustre,* Normanby Park Deer Park SE81 and Elsham Marsh TA01; *Epipactis helleborine* and *Phyllitis scolopendrium* from Frodingham Viaduct and *Picris hieracioides* from Frodingham Reserve, both SK81; *Gentianella amarella* from Elsham Chalk Pits TA01 and *Persicaria laxifolia (Polygonum mite)* from Torksey Lock SK87. This is not a new record but a very scarce plant restricted in Lincolnshire to the Torksey area, confirmed by J. Ackeroyd (Polygonaceae referee).

Paul Kirby's lists for 2003 include *Carex lasiocarpa, C. pulicaris* and *Equisetum x littorale* (confirmed P. Acock, *Equisetum* referee) from Laughton; *Apium inundatum, Stellaria palustris* and *Bidens cernua* from Roses Plantation SK89; *Festuca arenaria, Carex extensa* and *Medicago sativa* ssp. *varia* from Donna Nook TA40; *Barbarea stricta* from Burringham and East Ferry SE80; *Rorippa sylvestris,* confirmed by T. Rich from Leake Hurns End TF44. This was an unusual small-flowered form, not described in the Crucifer Handbook but will be included in the new edition to be published later by T. Rich. *Lemna minuta* Elsham Marsh TA01 and *Hypericum elodes* Twigmoor SE90.

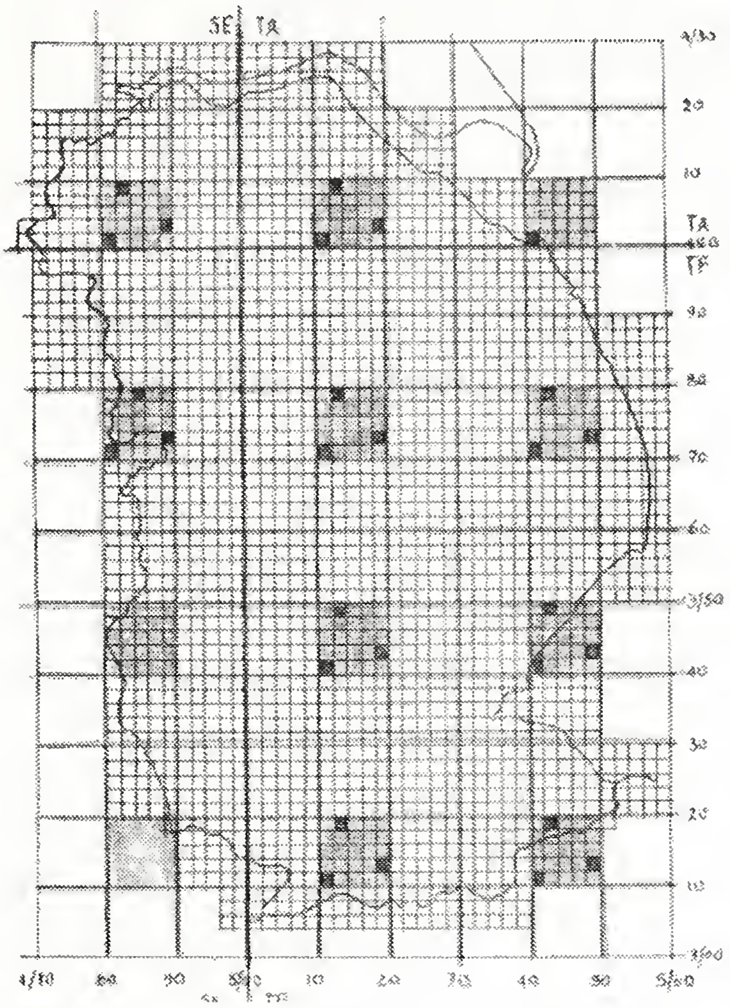
Frank Lammiman and Christine Reiser re-recorded *Chrysosplenium alternifolium* and *C. oppositifolium* from Hagworthingham TF36 and *Botrychium lunaria* from Sotby Meadows TF47. Paul Kirby and Mark Tyszka recorded *Bidens cernua* from Gt. Limber fishing ponds.

M. D. Pool continues to record on a tetrad basis for SW Lincolnshire VC 53. I should like to thank all contributors for their records and would welcome any not yet sent.

BSBI Local Change Project 2003-2004.

In 1987-88 the BSBI Monitoring Scheme recorded plants from 1 in 9 of the 10 km squares over Great Britain. All plants in the square were recorded and plants in the tetrads A, J and W (JAWS) were recorded in detail. The aim was to record as many different taxa as possible in the tetrads.

Now fifteen years later the tetrad scheme is being repeated so as to record change, i.e. losses and gains in each tetrad. The standard Flora being used is the second edition of the New Flora of the British Isles by C. A. Stace. The aim is to collect records of all native species subspecies and hybrids and also all alien plants which are described in the text.



BSBI Local Change Project 2003-4
Sample squares and tetrads in Lincolnshire

BSBI change introduces a revised concept of recording all plants in the wild whether planted or not. This means that any plants outside a garden are to be included and so field crops and planted trees come into this category. The guide to recording deals with definition for status – native, alien, established alien, planted alien, casual alien.

The Lincolnshire squares being worked are TA10, TA40, SE90, SK87, 84, 81, TF17, 47, 14, 44, 11 and 41 (see map). The following recorders have agreed to take part in the scheme and work has taken place over 2003. P. Kirby, V. Wilkin, Z. Harris, D. Knight, P. Phillips, J. Hudd, M. Tyszka, T. Smith, B. Hedley, M. D. Pool, E .J. Redshaw, K .K. Harrison, N. Harris, K. Heath and I. Weston.

The first year recording has gone well and lists have been received from each square. Some have already surpassed the 87-88 totals. These are already on MapMate and will be submitted at the end of 2004.

The Botanical Records Computer Project.

This is now well into its final year but there is still much to do. To date, Allan Binding has done a most exacting job and has installed over 420,000 records. With other records from BSBI monitoring and PK and M. D. Pool both using MapMate, the total must be nearer half a million records in the data bank.

The original Recorder programme is now replaced by MapMate which has constant and instant back-up from BSBI and which is more user-friendly and quicker. Thanks are due to Paul Kirby who has worked closely with Allan to co-ordinate the programme. Our original team, PK, VW, ZH and myself, continue to prepare records for input. It has become very apparent that the older type of record, just County Division, or parish, or even 10k square is not adequate. The project has made us very aware of the need for detail and with current use outdoors of the GPS the accuracy will increase. All BSBI recorders are now using MapMate.

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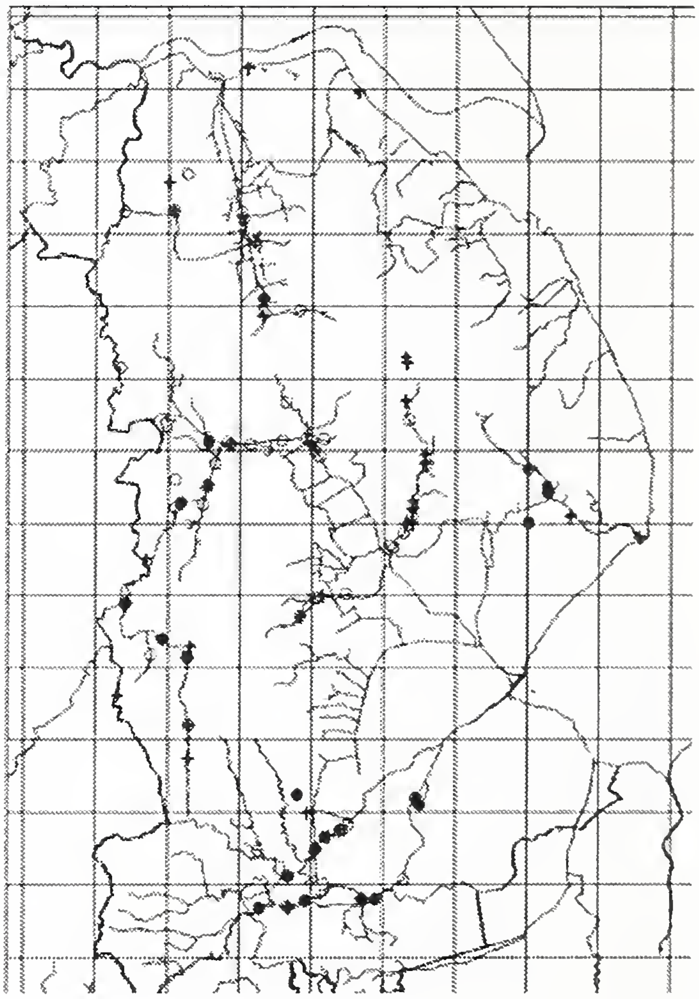
DRAGONFLIES AND DAMSELFLIES

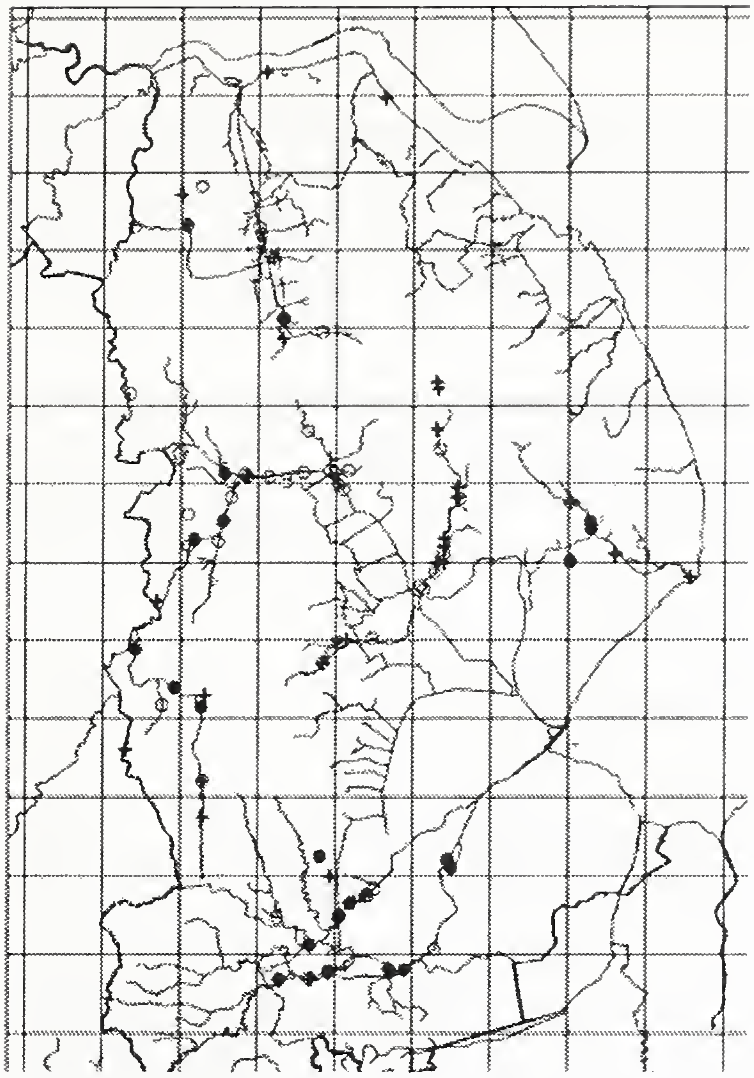
Richard Chadd and Alice Hiley

Generally 2003 was an unexceptional year as regards species new to Lincolnshire, but was rich in terms of adult and larval abundance. A highlight of 2003 was the discovery of a single larval white-legged damselfly *Platycnemis pennipes* in the Whaplode River in TF33. This is the first record for the county and is concomitant with the gradual north-easterly expansion of the species' distribution.



Red-eyed damselfly distribution. Black circles 1990-1994, crosses 1995-1999, white circles 2000-2003.

There was a continued expansion in the distribution of some other species. The addition of historical larval records (1990 to present) from the Environment Agency's database has filled in many gaps and expanded the published ranges of many species, most notably those of the red-eyed damselfly *Erythromma najas* and the banded demoiselle *Calopteryx splendens*. These two species show contrasting patterns of expansion. The banded demoiselle has become more widespread throughout Lincolnshire and is present on the majority of rivers, while the red-eyed damselfly has expanded its local range, filling the deep sluggish habitats on the rivers Welland, Ancholme and Witham.



Banded demoiselle distribution. Black circles 1990-1994, crosses, 1995-1999, white circles 2000-2003.

FRESHWATER INVERTEBRATES

Richard Chadd

Important records for caddisflies (Trichoptera) in 2003 included the caseless species *Tinodes maclachlani*, discovered by Julie Figures, as a mid-instar larva on limestone slabs on the bed of Winterton Beck. This is a species normally associated with trickles on vertical rock faces (waterfalls and cliffs) but can occasionally colonise horizontal substrata such as this. It is regarded as a species which is absent from much of lowland Britain and therefore of considerable importance in Lincolnshire.

Larvae of the nationally notable caseless caddis *Hydropsyche fulvipes* were found inhabiting a shallow chalk spring head at Oxgangs House (plate 11) on the western slope of the Nettleton – Walesby ridge in August 2003. This species is restricted to calcareous springs, but is a clear rarity even in appropriate habitats (this is the first known record for Lincolnshire). Other spring sources on the same ridge were also found to support *Wormaldia occipitalis* and *Plectrocnemia geniculata*, both of which are regarded as regionally notable species in south east and east England. In large spring-fed trickles, *W. occipitalis* inhabits miniature rapids and waterfalls, so the physical structure and volume of flow in the spring is an additional constraint upon its distribution in Lincolnshire.

Among the cased Trichoptera found in 2003, larvae of the nationally scarce species *Beraeodes minutus* were found in the lower reaches of the River Waring (the species, associated with inundated tree roots, has been found previously at the same site and appears to be persisting).

Species of note in other groups included the semi-upland stonefly (Plecoptera) *Nemurella picteti*, which was widespread in chalk spring sources in the north of the Wolds, the subterranean shrimp *Niphargus aquilex* and stenothermic flatworm (Turbellaria) *Phagocata vitta*, both of which inhabited springs in the Nettleton – Walesby area and (in the latter case) to the east of Market Rasen. All three are nationally common but rare in Lincolnshire.

The nationally scarce and little-known leech *Boreobdella verrucata* (F: Glossiphoniidae) was colonising sites in the middle reaches of the River Bain and upper Waring in Belchford. This is a new record for the county.

BUGS

Annette Binding

In 2003 we recorded a new shieldbug species for the county. Two specimens of the negro bug *Thyreocoris scarabaeoides* were swept from drainside vegetation by Allan when we were carrying out a survey of Cove Farm, Haxey on the 28th July. This species is thought to breed on violets but the plant species was not present at the site. We attempted to keep the bugs alive in order to learn about their behaviour and possibly to breed from them. Unfortunately one, the female, died fairly soon after capture. The male however continued to thrive kept in dry moss over winter, but it died on the 16th March 2004. The bugs are quite small, only 3 to 4mm long and mainly black with either a blue or bronze metallic sheen. The negro bug is the only species of Corimelaeninae in Europe and has a mainly southern distribution in Great Britain.

The discovery of the negro bug brings the total number of shieldbugs recorded from the county to 19 which is about half the British list.

Eleven of the other 18 species already recorded from the county were found in 2003. There were only two records of the blue bug *Zicrona caerulea* in 2003, a common but under recorded species. Allan Binding recorded one at College Wood on the 14th April and John Bratton sent me a record of one from a garden at Winteringham found on the 19th July. Colin Smith sent me the only record of the gorse shieldbug *Piezodorus lituratus* (plate 12). As its name suggests the species is found on gorse and also on broom, laburnum and garden species of *Genista*. It is not uncommon in the county but is very difficult to see on its food plant as it has excellent camouflage. There were only two records of *Elasmostethus tristriatus,* both from Alan Dale who recorded two individuals at Low Hameringham in North Lincolnshire, one on the 5th September and another on the 14th September.

Finally a bug species sent to me in 2003 by John Lamin was identified as the fly bug *Reduvius personatus* (plate 13). This very large black bug, John's specimen measured 17mm, is usually found inside houses and outbuildings and is a predator of silverfish, booklice and bedbugs. It will also attack harvestmen and flies. The adults are attracted to light and John caught the bug when it came to his MV Light on the 14th July 2002 at Callan's Lane Wood. There were only two previous records for this species in Lincolnshire. H. T. Simms found it in 'Area 6' 1885 and Kirk in 1942 found a pair in the

Science Laboratory at Donington Grammar School. Dr Peter Kirby confirmed that there were no other Lincolnshire records (P. Kirby, pers. comm.).

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BEETLES

Roger Key

Of the 3 species new to Lincolnshire that I found out about in 2003, only one was actually recorded in that year, the other two being reports of species found in earlier years but only brought to my attention in 2003. Statuses quoted are taken from Hyman & Parsons (1992 & 1994).

Peter Kendal, from Goole, sent a record of the small beetle related to deathwatch and woodworm, *Dorcatoma dresdensis* Nationally Scarce category A, which he had found at Epworth Turbary on 15th January 2002, but hadn't realised the significance in Lincolnshire, there being a small number of records already in Yorkshire. The beetle lives in bracket fungi on trees and it has been identified by Harding & Rose (1986) as having strong association with a long continuity of the mature timber habitat, so its occurrence at Epworth Turbary is perhaps surprising. However, it may be spreading; according to Hyman & Parsons (1992), it was then not apparently known north of Cambridgeshire.

Malachius barnevillei photo Roger Key

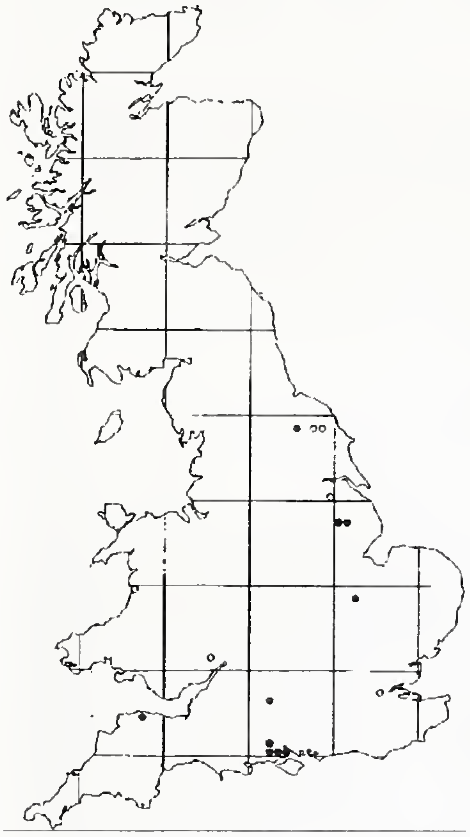
Most significant of the new records is the malachite beetle *Malachius barnevillei* (Red Data Book Category 3 - Rare), which Annette Binding found at Gibraltar Point on 10th July 2001. This is the first time the very rare sand-dune-dwelling beetle has ever been found outside of the North Norfolk coast, despite the short distance across the Wash and the suitable habitat along the Lincolnshire coast; and also despite repeated searches on my own behalf, as I have always been convinced that, like some of the other Norfolk coast specialities like *Pseudaplimonas limonii*, it would one day be shown also to inhabit the Lincolnshire dunes. A most significant find.

Annette also added another species to the county fauna, this time in 2003. On 11th June, and again on 13th June she found *Coeliodes nigritarsis* (technically still Nationally Scarce Category A, but spreading and no longer warranting this status), a small red weevil feeding on birch at Middle Rasen plantation. This is a northern species, formerly confined thought to be confined to the Scottish birch woodlands but has been spreading south in recent years.

Annette also had several other significant finds of weevils with few other Lincs records during the year, including the closely related species *Coeliodes rubicundus*, an oak-feeding species, found at Cove Farm Fields near Haxey SE740015 on 18th July. This is only the 7th recent record of a total of 10 records for the county. Other significant weevils were: *Curculio rubidus* and *Rhinoncus bruchoides*, also at Cove Farm Fields on the same date (only the 2nd county record, the former first having been found at Tattershall Carr in 1995 and the 4th record of the latter); the jumping weevil *Rhynchaenus alni* from Scotgrove Wood on 7th July, only the 2nd recent record (otherwise at Crowle Borrow Pits in 1981 and a 19th century record from Cleethorpes).

Anoplodera sexguttata photo Roger Key

Annette also refound one of our rarest longhorns *Anoplodera sexguttata* (RDB3 rare) at College Wood on 24th June. This is a species with a peculiar distribution: the New Forest, North Devon, North Yorkshire and the Lincolnshire Limewoods, (Twin & Harding; 1999) all in very restricted areas. It is difficult to account for such a disjunct distribution pattern. She also found another scarce longhorn *Phymatodes alni*, a species that mimics velvet ants which have a painful sting, at Moor Farm on 25th May. This is the fourth site for this Nationally Scarce (category B) species, the others being College Wood, Grimsthorpe Park & Epworth Turbary. Another locally scarce longhorn, *Leptura livida* turned up at the disused railway station at Washingborough on both 7th and 9th June, indicating there is colony of the species nearby, only the 4th site in the county.



Map Distribution of *Anoplodera sexguttata*, modified after Twinn & Harding (1999)

As always Annette made significant other records in the county during the year. These included the metallic black scavenger beetle *Margarinotus purpurascens* which she found at Moor Farm on the 26th May, only the 3rd Lincs record, otherwise having been found at Pennels garden centre in Lincoln and at Kirkby Moor. Also at Moor Farm was a small dull green jewel beetle *Agrilus laticornis*, found on the 9th of June, only the 4th recent record as well as six old ones, as well as *Stilbus oblongus*, a 'smut beetle' found in the leaf sheaths of reedmace, which she found on 3rd November, only the 5th county record. She also found two new sites for the soldier beetle *Rhagonycha lutea* Thurlby Wood, near Naith Park on 20th June and Hatton Wood on 26th June. These are the 6th and 7th county records. Finally, she also found the dry carrion beetle *Dermestes maculatus* at Whisby Nature Park on 16th June, the 5th county record. This species is probably overlooked as searching for it usually necessitates searching rabbit carcases found on dry sandy ground. Finally Lincolnshire's special rarity, the hazel pot beetle *Cryptocephalus coryli* (Red Data Book 1 Endangered and listed on the UK BAP) turned up not only again at Linwood Warren on 28th May, where it was found for the first time last year since 1949, but a specimen was also found at Moor Farm on 26th May, somewhere it has never been seen before.

Phymatodes testaceus
photo Roger Labbett

It remains to be seen whether it is part of a population there (or may found one) or is a disperser from nearby Kirkby.Moor. The introduced population at Whisby seems to be continuing to do well.

Roger Labbett supplied a batch of records in an unusual format - a CD of excellent digital photographs of live beetles including the tanbark longhorn *Phymatodes testaceus* from Kenwick Park near Louth on 22nd June, only the third Lincs site (the others being Grimsthorpe Park (where there are many records) and Belton Park). This is a very variable species in colour and this form, plain red brown, is not one I'd seen before and it took me a while to work out what it was (I had only seen ones with metallic blue elytra and red thorax before). This species is usually indicative of a rich dead wood fauna, and Kenwick Park would appear to warrant further investigation.

Another species included on Roger's CD was a possible *Nicrophorus interruptus* in his garden at Louth on 13th July. This is the rarest of our red-and-black sexton beetles which is characterised by an interruption of both of the orange bands across the elytra. Unfortunately, the fully diagnostic features of the species are on the underside and so the record can't be completely accepted.There is only one confirmed county record of the species, at Crowle Moors in 1998.

Gina Standring with the Crowland musk beetle
photo Roger Key

2003 was obviously a good longhorn year - John Lamin found *Asemum striatum*, associated with dead pine, at Callan's Lane Wood on 15th July, only the 4th county record (the others being Linwood Warren, Roughton Moor Wood and Bourne South Fen. He also found *Leptura rubra*, also a dead pine species, at Bourne South Fen on 11th July. This is the 10th county record of this species that is known to spreading fast, though it is the first in South Lincolnshire. Also at Callans Lane Wood he found Britain's largest click beetle *Stenagostus rhombeus* on 31st July. This is a dead-wood species, usually only found in sites with lots of old trees, and is only the 3rd county, the others being Grimsthorpe Park and from a small wood near Braceborough.

One Nationally Scarce (category B) longhorn, the bright metallic green musk beetle *Aromia moschata* turned up under my nose at Crowland at Yellowstockings Hall, initially on 20th June and again 22nd and 28th of June, found by young naturalist Gina Standring in a small patch of dying willows beside the main A1073 road where it was apparent from exit holes that there was a fair sized colony. Somewhat embarrassing, this is one of Britain's largest and most conspicuous beetles and turned up no more than 400 yards from my home. After appealing through posters in the town for additional records, a second colony turned up at Alderlands, on the other side of Crowland, about another 400 yards from my home, so I now find I am bracketed by colonies of a rare, very conspicuous beetle that I had no idea were there! This attracted media interest and an article in the Spalding Herald, though no further records turned up as a result.

Colin Smith specialised in finding rare black forms of scarce beetles this year. Of particular interest was the small rove beetle *Bledius femoralis* Nationally Scarce category A, which is usually black and red, from Woodhall Spa on 4th August, only the 2nd record, the other being from Saltfleetby-Theddlethorpe. It is a beetle of sandy places, where it burrows into bare sand by water. Also in black form was the (usually bright blue) leaf beetle *Chrysolina orichalcea* (Nationally Scarce category A) which feeds on cow parsley, from Willingham Forest on 5th November. The only other recent records are also of the black form, are from Washingborough, but there are also 6 much older records. Colin's other significant record of the year is another (normally) black species, the wood boring beetle *Ernobius nigrinus*, also from Willingham Forest on 12th June, only the 2nd county record, the other being from Kirkby Moor in 1996.

Chrysolina orichalcea - black form
photo Roger Key

John Walker observed further specimens of one of Lincolnshire's rarest beetles, the crucifix ground beetle *Panageus crux-major* (RDB1 endangered and listed on the UK BAP) at Rimac on 21st June and 17th August. English Nature-funded work to elucidate the ecology of this species has been unfruitful - we simply cannot find enough individuals to ascertain what they are doing and what their needs are.

Alan Lazenby found the attractive metallic green ground beetle *Pterostichus cupreus* at Blankney Fen on 17th April, only the 15th record of this conspicuous species in a well recorded group, and John Bratton found the small water beetle *Haliplus laminatus* (Nationally Scarce category B) in the Catchwater Drain, at New York on 28th September, only the 5th county record. Martin Hammond recorded a very scarce water beetle *Hydrochus elongatus* (RDB3 - Rare) at Crowle Brick Pits, the 6th county record but the first confirmed record for North Lincs, although there are two other unconfirmed ones. Roger Morris found he was host to an infestation of the biscuit beetle *Stegobium paniceum* at his home in Stamford in August. There are only three recent records of this stored products pest, though plenty of old ones, though it is likely that the public health department would know of many more recent records.

Finally, my own meagre contributions to the knowledge of our county's beetle fauna: just two records of any significance. On 11th August I visited Gibraltar Point with the express purpose of searching for the flea beetle *Psylliodes marcida* (plate 14), which feeds on sea rocket, for a project at Leeds University which is undertaking genetic comparison of beetles related to the Lundy cabbage flea beetle *Psylliodes luridipennis*. We wanted *P. marcida* from the east coast of Britain to compare with the same species on the west coast, closer to Lundy Island. Although *Psylliodes marcida* had not been recorded in Lincolnshire since 1896 and there were only 3 records in total, all 19th century - from Mablethorpe, Trusthorpe and Theddlethorpe, I knew that its foodplant was abundant on the foredunes at Gibraltar Point and so gave it a try. Within seconds of finding sea rocket, I was finding dozens of specimens of the flea beetle. It is amazing that a species can remain overlooked in a county for over 100 years and then turn up again in such abundance.

On the same day I found the metallic violet weevil *Pseudaplimonas limonii*, (Nationally Scarce Category A) which feeds on sea lavender, in great abundance on the saltmarsh at the south end of the reserve. This was new to the county in 1996 from Frampton Marsh and, like *Malachius barnevillei* above, seems to have only just escaped from its Norfolk stronghold.

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BUTTERFLIES

Allan Binding

Butterfly recording is a joint effort between the Lincolnshire Naturalists' Union and Butterfly Conservation Lincolnshire Branch. All data is used in the National Butterfly Recording Scheme to update the National Butterfly Atlas.

2003 was a wonderful year for butterflies. Many species were seen in good numbers, although small heath is still declining.

The rare migrant Bath white was discovered in with a colony of large whites feeding on the sea lavender near Mill Hill at Gibraltar Point in August by Jim and Janice Clarke. The butterfly was reported to the warden Kevin Wilson, who then passed the record on to me. A few weeks later, Jim Clarke telephoned me regarding this butterfly. He told me that in the late 1940's he lived in Kent, where on good migration years he found Bath white amongst migrating large white butterflies feeding on the grassland flowers. So when he found a colony of large whites at Gibraltar Point he naturally had a look for Bath whites.

This is only the third time that Bath white has been recorded in Lincolnshire. The first record was the 17 July 1894 at Grimsby by G. Shelton and the second record was the 25 August 1913 at Kirton in Lindsey by Rev. E. A. Woodruff-Peacock.

Another uncommon migrant, the clouded yellow, was seen in eleven locations in 2003, mostly in mid- and North Lincolnshire.

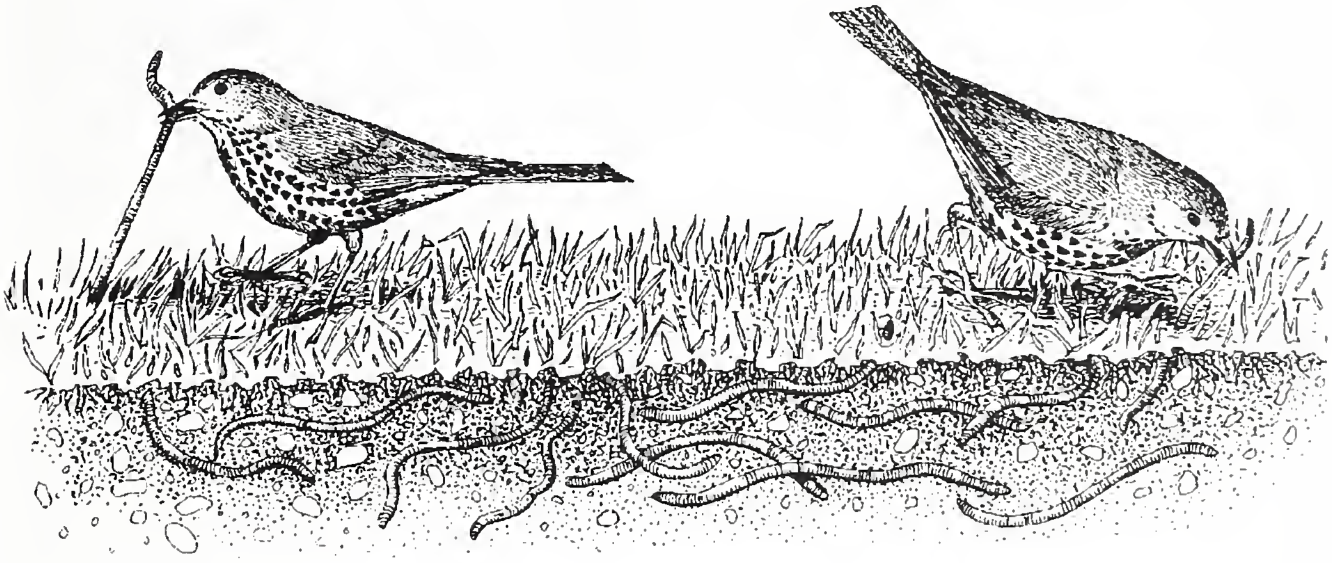
Red admiral was very common in the county in 2003 with butterflies being seen from early spring until the autumn. Although mainly a migrant, we believe this species is starting to over-winter in this country as records of hibernating butterflies are regularly reported.

A single dark green fritillary (plate 15) was found feeding in Toby Ludlow's neighbour's Coningsby garden on the 9 July. Toby managed to take a photograph of it to confirm the record. This species was also seen at Swinn Wood by Harry Turner on the 13 July. It is possible that these butterflies had flown across the Wash from the North Norfolk colonies.

White-letter hairstreak was reported from at least 11 locations in Lincolnshire in 2003, many of them from the Grimsby and Humber bank areas.

Dingy skipper are just maintaining their colonies in the south west of the county, as are grizzled skipper.

For most of the other species of butterflies in Lincolnshire the long hot summer gave them the chance to thrive and expand their numbers.



MOTHS

Phil Porter

MIGRANTS.

This was the year of the humming-bird hawk-moth *Macroglossum stellatarum* with many, many records received from all areas from 5th June to 18th October. In fact a record has emerged in March 2004 to virtually prove successful overwintering. Many rush veneer *Nomophila noctuella* were also recorded from 30th July to 5th November. Less frequent migrants were as follows; Pearly underwing *Peridroma saucia* at Grimsby, Mr. V. Adams, 25th July, and at Muckton, Mr. G. Wright, 8th August; a few are seen each year. Vine's Rustic *Hoplodrina ambigua* with 7 records, which ranks as the second best year ever, after 1997 when there were 9. Dark Sword-grass *Agrotis ipsilon*, the 11 records were above average. Bedstraw Hawk-moth *Hyles galli* at Howdales, Mr. J. Janes, 17th June is the 12th since 1980's. Bordered Straw *Heliothis peltigera* at Messingham, Mr. J. Petyt, 22nd June was the first since 2000. Convolvulus Hawk-moth *Agrius convolvuli* at Howdales, Mr. J. Janes, 19th September, at Muckton, Mr. G. Wright, 27th August, at Haxey, Mrs. P. Woodliffe, 27th June and at Gibraltar Point, Mr. C. Smith, 22nd August; this is seen most years but always noteworthy. Small Mottled Willow *Spodoptera exigua* at Louth, Mr. R. Labbett, 24th August is the 7th recent record. *Plutella xylostella* at Bourne South Fen, Mr. J. Lamin, 2nd June, at Callan's Lane Wood, Mr. J. Lamin, 8th July and at Grimsthorpe Park, Mr. J. Lamin, 18th July; this is usually common. *Sitochroa palealis* at Grimsthorpe Park, Mr. J. Lamin, 18th July is the 6th record in county and the 2nd consecutive year at Grimsthorpe. *Udea ferrugalis* at Bourne South Fen, Mr. J. Lamin, 9th August, at Broadholme, Mr. R. Grey 18th September and at Gibraltar Point, Mr. C. Smith 22nd August; a few are seen each year.

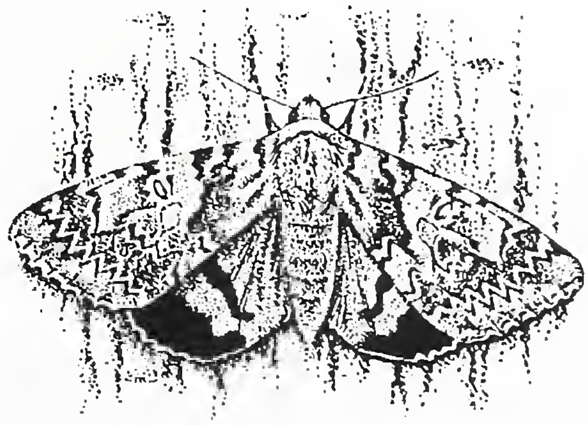
NOTABLE MACROMOTHS

Square-spotted clay *Xestia rhomboidea* at Grimsthorpe Park, Mr. J. Lamin, 30th June, at Callan's Lane Wood, Mr. J. Lamin, 31st July and at Grimsthorpe Park ,Mr. J. Lamin, 8th August; these are the 9th-11th since Pilcher. Light Orange Underwing *Archiearis notha* at Callan's Lane Wood, Mr. J. Lamin, 23rd March; seen approximately one year in two. Red-necked Footman *Atolmis rubricollis* at Callan's Lane Wood, Mr. J. Lamin, 16th June is the 1st since 1950.

NOTABLE MICROMOTHS

Stigmella speciosa. Nepticulidae.
New Forest Plantation, Mr. C. Smith, 1st October.
Ealand, Mr. C. Smith, 1st October
Market Rasen, Mr. C. Smith, 4th October. 5th-7th county records; all new sites.
A sycamore *Acer pseudoplatanus* specialist with a distribution confined strictly to southern and eastern England from Dorset to Lincolnshire.
Acrocercops brongniardella. Gracillariidae.
Glentham, Mr. C. Smith, 3rd October. 3rd county record; 1st for VC54.
A very local southern species in open woodland where the larva feeds within oak leaves.
Ypsolopha sylvella. Yponimeutidae.
Woodhall Spa Golf Course, Mr. C. Smith, 4th August. 3rd county record (in consecutive years).
An oak-feeder with a local British distribution north to Lincolnshire with occasional records further north.

Coleophora currucipennella. Coleophoridae.
Birds Wood, Mr. C. Smith, 27th June. 1st county record since Mason.
A rather local woodland species of southern distribution.
Coleophora vestianella. Coleophoridae.
Bird's Wood, Mr. C. Smith, 27th June
Willingham Forest, Mr. C. Smith, 9th July. 3rd & 4th county records since Mason.
Recorded from only nine vice-counties in Britain prior to 1996. Larvae feed on species of goosefoot *Chenopodium* and orache *Atriplex* on wasteground, arable land and sandhills where the characteristic larval cases are very difficult to find.
Coleophora salinella. Coleophoridae.
Gibraltar Point, Mr. C. Smith, 22nd August. 1st county record for 18 years.
Another strictly coastal species. Larvae feed on sea-purslane *Halimione portulacoides* and some maritime orache *Atriplex* species.
Coleophora taeniipennella. Coleophoridae.
Willingham Forest, Mr. C. Smith, 9th July. 3rd county record , 2nd site; all recent.
This is found in damp woodland rides and meadows where jointed rush *Juncus articulatus* or a few other *Juncus* species are found. It is rare or absent in eastern England from the Wash northwards.
Coleophora salicorniae. Coleophoridae.
Gibraltar Point, Mr. C. Smith, 22nd August. 1st county record for 14 years.
A strictly coastal species around coasts from Yorkshire to North Wales, feeding on glasswort. *Salicornia* species.
Monochroa cytisella. Gelechidae.
Grimsthorpe Park, Mr. J. Lamin, 18th July. 1st for VC53.
The larva feeds in bracken *Pteridium aquilinum* stems causing the shoot tips to die. Found in woods and heaths mainly on acid soils.
Eulamprotes wilkella. Gelechidae
Woodhall Spa Golf Course, Mr. C. Smith, 4th August. 2nd county record; normally coastal.
This frequents shingle beaches and sandy areas where common mouse-ear Cerastium fontanum is thought to be the foodplant.
Parachronistis albiceps. Gelechidae.
Callan's Lane Wood, Mr. J. Lamin, 29th June. 1st for VC53.
A widespread southern species at its northern limit associated with hazel *Corylus avellana.*
Scrobipalpa costella. Gelechidae.
Temple Wood, Mr. J. Lamin, 31st May. 4th for VC 53.
Associated with bittersweet *Solanum dulcemara*, with no rigid habitat constraints.
Mompha propinquella. Momphidae.
Callan's Lane Wood, Mr. J. Lamin, 31st July. 1st for VC53.
The larva mines within a variety of willowherb *Epilobium* species. Widely distributed elsewhere in Britain.



WASPS, ANTS and BEES

Michael Archer

One new species for Lincolnshire, *Chrysis mediata* Linsenmaier, was made by Austin Brackenbury from Kingsthorpe. Hornets (plate 16) were recorded by C. Smith, Alison Brownlow and Irene Weston and the bee-wolf, *Philanthus triangulum* (Fab.), by Roger Key. My review of the aculeate wasps and bees of Messingham Sand Quarry has been published in the Naturalist (117 species with 8 species of national importance from 28 visits). My work at Rauceby Warren has now finished with 107 species from 25 visits.

MOLLUSCS

John Redshaw

In March, during removal of rubbish from a pond at the Vernatts Local Nature Reserve (TF248241), Annette Faulkner found many lake limpets *Acroloxus lacustris* adhering to a tree tube that had been dumped in the pond.

Following a request from Kevin Wilson to identify snails found under timber in the dune slacks at Gibraltar Point NNR, I visited the slacks near Greenshank Creek (TF5659) on 5th April. Many common door snails *Clausilia bidentata* were found, a new species record for the reserve, all under old timber in the short turf at the edge of the high tide line. Also found in the humid conditions under the timber were specimens of moss snail *Pupilla muscorum*, hairy snail *Trichia hispida*, netted slug *Deroceras reticulatum,* and the reserve's first example of marsh tawny snail *Euconulus alderi*. This latter species occurs in similar situations at Saltfleetby-Theddlethorpe NNR. Its presence at Gibraltar Point provides only the third record of this species for the county. Other species in the short turf assemblage were wrinkled snail *Candidula intersecta*, banded snail *Cernuella virgata,* cellar glass snail *Oxychilus cellarius* and brown-lipped snail *Cepaea nemoralis.*

On 15th May at Baston Fen NR (TF1714) many Lister's river snails *Viviparus contectus* were seen crawling on the bottom mud in Watts' Dyke in a section slubbed out two years ago. The water was very clear with minimal vegetation, and 14 specimens were in view from one standing position on the bank, with a similar density throughout the section. This, our largest snail species, was formerly frequent in the adjacent Counter Drain, but in recent years had become very scarce. Later in the year the dyke had a dense flora of *Elodea nuttallii.*

On 20th August I visited the River Witham between Boston and Anton's Gowt, the River Glen at West Pinchbeck and the River Welland between Spalding and Cowbit to assist a survey team investigating the distribution of the Witham orb mussel *Sphaerium solidum.* No specimens were found in the sections sampled. At the River Welland site (TF 238192) a dredge was used and produced about twelve duck mussels *Anodonta anatina* and ten painters' mussels *Unio pictorum* in a single pull. These were all live and were returned to the river.

A brief visit to Branston Delph (TF075701) in February 1999 indicated that a survey of this waterway might provide some interesting molluscan records. However, when the Delph was visited on 30th August 2003 I found much of it to be severely overgrown with branched bur-reed *Sparganium erectum*, common reed *Phragmites australis* and reedmace *Typha latifolia*, and the open water areas choked with rigid hornwort *Ceratophyllum demersum*. The molluscan assemblage was relatively poor, consisting of Leach's Bithynia *Bithynia leachii* and seven other more common species.

MAMMALS AND HERPTILES

Colin Faulkner

The year 2003 was a more interesting year than 2002 with the report of a pine marten *Martes martes* at Wragby in May; this was investigated by the Vincent Wildlife Foundation and given a score of 7 out of 10. A second reported sighting at Messingham Sand Quarry in July was reported but no further information has been forthcoming on this. Of the other mustelids, stoat *Mustela erminea* and weasel *M. nivalis* records came in good numbers with four mink and three otter sightings. The four mink records ranged from Kirkby Pits, Thurlby Fen, Tattershall Pits and the boundary of Carholme golf course. The otter records came from a vague report near Louth, the West Fen drain at Thornton le Fen and again at Tattershall, this time on the river by the church; the otter seems well established on the Bain now. Of thirty three records of badgers *Meles meles* seventeen were found dead on the road. Most of the others were identified either by droppings or tracks, only two were live sightings. Many hedgehogs *Erinaceus europeas* too were identified as road deaths but a large number were seen alive. Foxes *Vulpes vulpes* on the other hand were mostly recorded either alive or by their scent.

Water vole *Arvicola terrestris* sightings range from South Ferriby in the north to Tongue End in the south, the northerly ones being seen on the Humber Bank. We have had seven sightings of field voles *Microtus agrestis* of which four came from Wildmore Fen by Roger Parsons, the others coming from Wrangle, Old Bolingbroke and Spalding. There were only three records of bank voles *Clethrionomys glareolus.* Also there were only three records of wood mouse *Apodemus sylvaticus* in the county and again two of the three came from Wildmore Fen, the third from Billinghay. There were eight records of house mice *Mus domesticus,* all from the same address as the owner of the property had set traps and thought to record the results for me. The brown rat *Rattus norvegicus* is abundant all over county. Being a large rodent and very agile it has little to fear from predation and consequently can be quite obvious in day time, though Annette Faulkner did watch a heron swallow a young one on the river Welland in Spalding. Hares *Lepus capensis* abound (excuse the pun) with sixty five records throughout the county though rabbits *Oryctolagus cuniculus* do not seem to be so frequent. Both species have been recorded on the salt marshes of the Wash. Records for grey squirrel *Sciurus carolinensis* are all in the centre of the county and mostly from nature reserves or woods with public access. In view of the fact that they are common in urban areas it would be interesting to have records from people's gardens.

Eleven sightings of common shrew *Sorex araneus* were made during the year. An interesting one was made by Simon Rummery of a shrew high up on the brick work at the entrance of Toft Tunnel nature reserve during February. There were no records of lesser shrew *Sorex minutus*. Two reports of water shrew *Neomys fodiens* were given by Brian Headley, one at Greetwell Hollow and one at Gibraltar Point NNR. Moles are common throughout the county.

Four species of deer were recorded in the county during the year. Two Chinese water deer *Hydropotes inermis* were seen, both in the Fens, one at Dunsby Fen and the other at Bourne South Fen. There were six reports of fallow *Cervus dama,* all seen in woods or close to woods. Away from woodland roe deer *Capreolus capreolus* were found, at Saltfleetby-Theddlethorpe Dunes, also near the Skellingthorpe by-pass but the exact site was not recorded, Muntjac *Muntiacus reevesii* was the most numerous deer to be recorded with eleven sightings. Elder Holt at South Kelsey had the only record of red deer *Cervus elaphus.*

Saltfleetby-Theddlethorpe was also the home of a dead Minke Whale *Balaenoptera acutorostrata* with two sightings of common seal *Phoca vitulina* in the Wash.

Most reports of common frog *Rana temporaria* came from people's garden ponds. A frog was released from a fire hydrant at Ancaster Brookside and a number were found squashed on the road at Cherry Willingham (The only recorded road casualties of frogs for the year). A second hatching of spawn occurred at Low Hammerington, in May, the first happening in March and an albino was found at Messingham Sand Quarries reserve. In contrast at Carlton le Moorland a black specimen of common toad *Bufo bufo* was discovered. All records apart from one came from the middle of the county, there were none from the Fens.

Sightings of greater crested newt *Triturus cristatus* occurred at Gainsborough, Louth, Lincoln, Swallow, Gayton le Marsh, Stickford and Pinchbeck Slipe nature reserve with the palmate newts *Triturus helveticus* still being recorded at Chambers Farm Woods. Smooth newts *Triturus vulgaris* records came from Whisby Nature Park, two sites in Lincoln, Sturton by Stow, Roughton, Horkstow and again from the same pond at Stickford

Moor Farm and Kirkby Moor nature reserves are still the only sites for the adder *Viper berus* with Kirkby Moor recording common lizard *Lacerta vivipera.* The majority of reports came from nature reserves, the others being Little Scrubs, Whisby Nature Park and Chamber's Wood. Otherwise there were two sightings at Lincoln and one at Legsby Wood. Grass snakes *Natrix natrix* range from Marton, Haxey, and Market Rasen in the north through Welton, Lincoln, Roughton down to Old Bolingbroke but nothing in the fens where they do occur. Again there are two records from nature reserves, Gibraltar Point and Chamber's Wood.

BATS

Annette Faulkner

The year started, as usual, with surveys of the regular hibernation sites at South Elkington (cellars), and two railway tunnels near Louth, where record numbers of bats were recorded, topping 100 by a considerable margin for the first time. Sadly, this was not reflected at the two sites at Harlaxton and near Bourne, where barbastelle *Barbastella barbastellus* counts were down on the previous year. However, to partly make up for this a hibernating female barbastelle was found in an outbuilding at Witham on the Hill on 3 January, which was successfully released.

In May, the regular five yearly questionnaire to update roost records was sent out to 76 roost owners, some receiving a questionnaire for the second time round, and our oldest roost, at Sutton St Edmund, that was first recorded in 1982, is still going strong - though we don't know what the species is. We had a 47% return on the 2003 questionnaire and the results are encouraging: out of the 35 forms returned, 23 roost owners still had their bats and only 7 had lost them (plus 5 don't knows). As far as attitude to having bats was concerned, 29 were happy to have them, with only 6 putting up with them.

However it did highlight one big problem that is increasingly giving cause for concern: several people had lost their bats as a result of replacing their fascias, even when they had done what they thought were all the right things to keep the roost. This issue highlights widespread ignorance of the law and the necessity to seek advice from English Nature before doing any work that could affect a bat roost. Trying to find a way to get this message across is of ongoing concern to all involved with bat conservation.

Those of us who take part in the National Bat Monitoring Programme did our usual summer surveys for pipistrelles *Pipistrellus pipistrellus* and *P. pygmaeus*, noctules *Nyctalus noctula* and Daubenton's bats *Myotis daubentonii*. In addition a number of householders continued to count the bats emerging from their roosts three times during June, as part of the National Bat Colony Survey - in this case mostly pipistrelles, but also some brown long-eareds *Plecotus auritus*. The results suggest stable populations rather than increases.

It is now nine years since I took over as county recorder, and the 'Putting Bats on the Map' project has expanded to the extent that well over half our records are generated from information given to us by members of the public. By putting this together with grounded bat records, English Nature roost reports, and work done by individual Bat Group members, we now have a very much better idea of species distribution throughout the county for at least some of our eleven species of bat, some of which is outlined below.

One of the most interesting discoveries is the comparative distribution of brown long-eareds throughout the county. Down in the Fens they appear to have suffered terribly from the huge amount of re-roofing and timber treatment that took place in the 1970s and 80s, coupled with general habitat loss, and nowadays roost sizes are struggling to get into double figures, with the only larger roosts to be found in a few churches. The books will tell you that brown long-eareds are a species of 'well-wooded river valleys', so they shouldn't be in Lincolnshire at all, let alone the Fens - but most of the research has been done in Scotland, and nice mature gardens with a few big trees will do just as well. Consequently, although their numbers are low they are still widespread throughout the Fens. However, the further north you go, the bigger the average roost size: near Wragby there is a colony of 60+ monitored every year. That is a sizeable roost for long-eareds, and I thought that was likely to be the biggest in the county - until a colleague was called out to a house in the Market Rasen area in summer 2003 where there was a colony of at least 115 - with 76 Natterer's *Myotis nattereri* bats also sharing the roost. This is a truly enormous roost, for both long-eareds and Natterer's - but the Market Rasen area is full of long-eared roosts, the veritable long-eared capital of the county, for which we have many records. Good habitat? Certainly. Less reroofing? Who knows?

Amongst the other species, the search for serotines *Eptesicus serotinus* goes on, with little fresh information this year, apart from one new possible site at Brinkhill, but barbastelles have fared rather better, with hibernating bats found near Wragby (1) and Nocton (2), and a dead barbastelle found in the summer at Wellingore. Interestingly, until the hibernating barbastelle was found near Wragby, all the records had been to the west and south of the fen edge, apart from 2 that were found in Lincoln in 1995.

Coincidentally to this, the Bat Group is involved in a project being run by the Vincent Wildlife Trust to try to find the northern-most limit of barbastelle distribution, and 100 special 'woodcrete' bat boxes are shortly to be installed in Chambers Farm Wood. This will be monitored partly by the VWT ecologist and partly by the Bat Group.

Finally, as a result of having so much information on distribution, it has been possible to produce a distribution map for bat species in Lincoln for the forthcoming Lincoln City Biodiversity Action Plan, with maps in preparation for Boston and Spalding. This really is the end result of all the hard work of the many people who have contributed records, as we now have enough information, at least for some parts of the county, to relate main roosting areas to types of buildings and the associated feeding areas, which can be used by local authorities for planning in all its many shapes and forms. To date we don't have enough information for any other town 'bat maps' - so please keep sending in those records! My thanks to all who already have.

BIRDS

Anne Goodall

In an average to good year for less common species, just some of the highlights were rose-coloured starlings at Cranwell from 2002 until March 2003 and in the Tetney area in June, a great white egret at Langtoft Pits in March and at Gibraltar Point, Frieston Shore and North Kyme in August, and red-rumped swallows at Frieston Shore and Fishtoft in late April and Gibraltar Point in early May. Also in May, there was a golden oriole at Humberston on the 3rd and Gibraltar Point on the 16th; a woodchat shrike at Donna Nook, a thrush nightingale at Gibraltar Point for a week, eventually trapped and ringed, and a stone-curlew at Horseshoe Point. Common rosefinches were seen at Barrow Haven in June and Gibraltar Point in September, and also in June there was a red-footed falcon at Gibraltar Point on the 1st, with perhaps the same one at Langtoft Pits from mid-month through July and presumably another at Barrow-on Humber on July 25-26th. As usual, things hotted up in autumn, with a bee-eater over Linwood Warren in July, a barred warbler at Donna Nook in August and a booted warbler there in September. Also in the latter month a Radde's warbler and Hume's yellow-browed warbler were at Gibraltar Point, a spotted crake at Tetney and an American wigeon at Covenham Reservoir. Two Sardinian warblers stayed in Skegness from October well into November, and also in November, two ravens were a great attraction at Belton Park.

The 'icing' aside, the year held a lot of interest for commoner species. Waxwings began arriving on the north-east coast early in January and quickly spread west along the Humber bank and south to Boston, inland to Lincoln and the south-west by the month end, but the highest numbers remained in the Cleethorpes area to March. A cold spell in mid-month brought bramblings; at least 100 in Twigmoor and c. 500 in the Lincoln area, where there was an arrival of at least 10,500 fieldfares and 3,500 redwings. On the Humber Bank pink-footed geese reached 3,500 at Read's Island in spring and a record 6510 in December, and there were 1,300 black-tailed godwits at Pyewipes in January, with 2390 at North Killingholme in September.

Avocets over-wintered at Read's Island, peaking at 241 in late March, and eventually 100 pairs bred there, but produced only c. 6 young. The first avocets returned to Frieston Shore in late February and c. 20 pairs bred there. From April there were welcome sightings of this species at most coastal sites and inland to Messingham and Bardney Ponds. Other successes include peregrine with at least 14 different birds wintering in North Lincolnshire and probably a similar total in the south; the first confirmed breeding attempt was recorded in 2003. Buzzards continue to increase: through the winter 1-8 birds could be seen soaring over most of the known breeding sites, and confirmed breeding pairs are now well into double figures throughout the county.

Not yet breeding, but surely soon, are little egrets. At the Hobhole Drain roost 12 over-wintered, and up to 3 were seen all year in all coastal and many inland sites. The highest count was 43 at Witham Mouth in September, but a co-ordinated count in Essex, where they do now breed, found more than 400 in October. The same goes for red kites, which occurred at 15 sites and in all months, mainly in the south-west, but right up to the Humber Bank. Breeding was confirmed though for crossbills at Rowland Plantation and Twigmoor. Redstarts bred in the Lincoln area for the second year running and bitterns and stonechats bred on the Humber Bank. Breeding woodlarks continue to increase in number; on the north-west Coversands alone, a survey found 56 territories.

The least welcome news on the breeding front was that barn owls had their worst Lincolnshire season in local memory. After a good breeding season in 2002, sightings of adult birds were common everywhere early in the year, and most ringers found very high nest box occupancy, but vole numbers crashed and brood reduction was very high. This is borne out by the ringing totals; the table shows that on average only one adult is trapped for 10 or so young, but in 2003 both adults were found in some boxes, with no young at all, and a ratio of only 2 nestlings ringed for each adult resulted.

Table 1: Barn Owl Ringing Totals for Lincolnshire

Year	Adults	Pulli	Ratio
1996	21	242	11.52
1997	22	199	9.05
1998	28	256	9.14
1999	23	264	11.48
2000	19	250	13.16
2001	39	142	3.64
2002	36	396	11.00
2003	72	142	1.97

ERRATA IN LINCOLNSHIRE NATURALIST VOLUME 25 PART 4

Page 226 - Plate 11 is mis-captioned. The weevil is *Polydrusus splendidus* as mentioned in the text, not *Polydrusus pulchellus* as captioned.
Page 246 – the ni Moth record from Gibraltar Point should have been credited to S. J. Ely

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TRANSACTIONS OF THE LINCOLNSHIRE NATURALISTS' UNION

Officers of the Union in 2003

President	Mark Crick	**President elect**	Chris Manning
General Secretary	Neil Pike	**Treasurer**	Ian MacAlpine-Leny
Auditor	John Levine	**Membership Secretary**	Vacant
Publicity Secretary	Vacant	**Programmes Secretary**	Phil Porter
Sales Secretary	Colin Smith	**Records Secretary**	Roger Key

Executive Committee Richard Chadd, Chris Manning, Roy Howard, Kate Smithers, Colin Smith
External representatives Roger Key (National Federation of Biological Recorders), Ken Rowland (Community Council & Swanholme Advisory Group), Neil Pike (Countryside Stewardship), Irene Weston and Ruth Race (Museum Action Group)

Section Recorders

Geology	Mr David Robinson
Bryophytes/lichens	Prof. Mark Seaward
Fungi	Mr Ken Rowland
Freshwater algae	Dr William Brierley
Higher plants	Mrs Irene Weston & Mr Paul Kirby
Molluscs	Mr John Redshaw
Spiders	Mrs Annette Binding
Isopods & Myriapods	Mr Neil Pike
Dragonflies	Mr Richard Chadd
Grasshoppers, etc.	Mr Brian Redman
Shield bugs	Mrs Annette Binding
Butterflies	Mr Allan Binding
Macro Moths	Mr Phil Porter
Micro Moths	Mr John Lamin & Mr Colin Smith
Flies	Mr Andrew Godfrey & Mrs Jillian Mears
Beetles	Dr Roger Key
Sawflies	Dr David Sheppard
Ants, wasps & bees	Dr Michael Archer
Plant galls	Mr Graeme Clayton
Freshwater invertebrates	Mr Richard Chadd
Fish	Mr Nick Bromidge & Mr Ian MacAlpine-Leny
Mammals & Herptiles	Mr Colin Faulkner
Bats	Mrs Annette Faulkner

SECRETARY'S REPORT

Neil Pike

Your Executive Committee met 5 times in the last 12 months, and I think it's fair to say that this period has been probably the most active in the 7 years I have sat on the Committee with a number of significant developments for the Union either delivered or in the pipeline.

Firstly, the LNU concluded a review and revision of its service level agreement with The Trust this year, which provides administrative and membership support to the organisation. I'm not going to say much more on this as no doubt the Honorary Treasurer will make reference to it in a short while during his report. I will just add however, that, in the opinion of the Executive Committee the SLA represents excellent value for money and represents a cornerstone should the LNU wish to significantly grow as an organisation. The SLA and negotiations relating to a Biological Records Centre (BRC) for Lincolnshire have opened up possibilities for closer relations between the

Trust and The Union and these are being investigated, although discussions are at an early stage. No doubt my successor will be in a better position to report on these next year.

The Executive Committee has been involved in negotiations with key partners about the establishment of a BRC for Lincolnshire. Progress has been made in this area during the last 12 months, with agreement reached on the principle of a record centre and for some elements of its operation. The President will replace me as your representative on the BRC working group over the next 12 months, when hopefully many of the details will be ironed out. All parties involved identify the fact that the Union needs to be at the core of any new BRC, and we are in an extremely strong negotiating position.

On a related subject, Professor Seaward has been negotiating with the University of Lincoln at Riseholme to find a home for part of the LNU collection – the library and possibly the herbarium. The Executive Committee wishes to thank Professor Seaward for his work so far, and have offered their support for his on-going negotiations. Once these are concluded, consideration will need to be given about a home for the remaining collections. This will no doubt be an issue that the Executive will need to consider over the next 12 months.

As mentioned in last years Secretary's report, Roger Key, who has been the LNU's honorary editor of Transactions for 10 years has finally retired from carrying out the entire process himself. I'm sure all members of the Union would join me in thanking Roger for his hard work over this time. The Lincolnshire Naturalist is a remarkable publication for an organisation of our size to produce, and a very large part of the credit for that must go to Roger. Members will be pleased to know that his skill is still being put to good use – only now as part of an editorial committee who will be undertaking the production of future LNU publications.

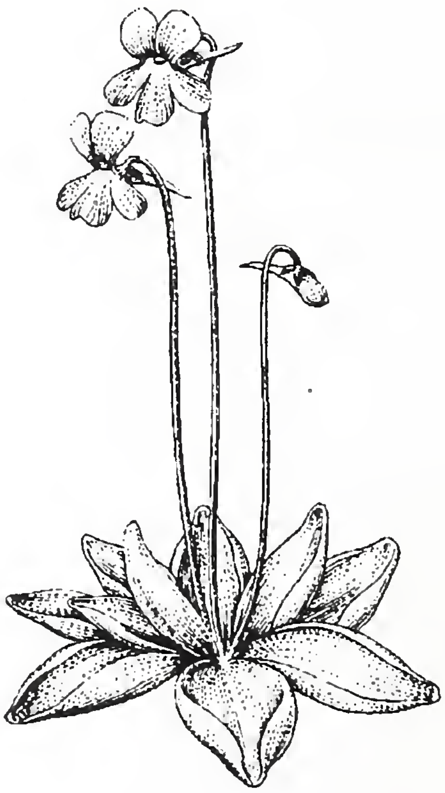
Finally, the Executive committee has been spending much of its time considering how the LNU can generate more interest in its work. The Executive is becoming increasingly concerned by the gradually falling membership, an increasingly large percentage of which are passive members, and the demographic make-up of the membership. In order to counteract this, the Executive has been considering the way the Union attracts members, and what the membership actually gets for its' buck'. The Wildnews Bulletin, created and run by Roger Parsons represents a magnificent example of how a simple idea, well managed, can catch the imagination. I'm pleased to announce that Roger has accepted a place on the Executive Committee of the LNU and his experience will be a tremendous help in considering ways the Union can continue to raise its profile. This year the LNU has finally produced an updated membership leaflet and the Website (along with a few other 'IT' ideas currently undergoing testing) is in the process of being significantly revamped. The LNU, as mentioned earlier, is examining ways of working closer with the Trust in order to attract more members. Finally, the Executive are trying to broaden out our work so that it appeals to those people not presently involved with the Union. The Union will be holding its first Family Fun Day in 2004 and events will be going on throughout the summer here at Whisby. If the Union wishes to engender interest in species recording among the young, we need more activities that will appeal to them, and I congratulate the Executive Committee for taking the step. It also hoped that these events may help to reverse the trend of declining attendance at field meetings.

Finally it is my sad duty to announce that Peter Medland died during the previous year. Peter was an active member of both the LNU and the Wildlife Trust, and continued to attend Field Meeting when they took place close to his Scunthorpe home until very recently. Not only was he always fascinated by the natural world, he was an active supporter of wildlife and a friend who always took the trouble to say hello.

I would like to offer thanks to the members of the executive committee for their sterling work on our behalf over what has been a very busy year. Thank you.

Meetings 2003

Saturday January 11th	Illustrated Talk. 'Hosts, Aliens and Parasites' by Geoff Ball.
Saturday February 16th	Annual Recorders Meeting.
Saturday March 23rd	AGM and Presidential Address by Neil Pike 'Ice Age Mammals- evidence from Lincolnshire gravel pits'.
13th April	660th field meeting 'The Jungle' Doddington Woodlands
18th May	661st field meeting Boothby Grange, Welton-le-Marsh
15th June	662nd field meeting Baston Fen
21st June	663rd field meeting Risby Warren
13th July	664th field meeting Goxhill Haven to Dawson City Claypits
10th August	665th field meeting Frieston Shore
14th September	666th field meeting Harlaxton Hall
18th October	667th field meeting Temple Wood near Bourne
Saturday, November 15th	Illustrated Talk. 'Micromoths; their Feeding Patterns on Plants' by Harry Beaumont.
Saturday, December 6th	Illustrated Talk. 'Porky Tales of Flies and Snails' by Dr. Dorothy Gennard.



Contributing to "The Lincolnshire Naturalist"

We are constantly on the lookout for full length articles or short notes, even a few lines which can be useful space fillers, on any aspect of our natural history, current or historic. Consider a note in "The Lincolnshire Naturalist" for any new or significant observations.

Articles should be typed. It would help the editors tremendously if they could either be e-mailed or sent on CD or floppy disk with accompanying paper copy, in just about any word processor format (although don't let this put you off sending in an article) and in the format described here. Adding an ASCII and/or RTF text file in addition to the word-processed file will ensure that it can be incorporated directly. Most word processors can also output in ASCII and RTF. Drawings, colour or black & white photographs, colour transparencies or negatives (please include a print) can be included. Colour illustration may be rendered to black & white. Please give a caption. Illustrations will be returned and edited text resubmitted to the author for approval and proof-reading before publication.

Convention adopted for names - Latin names should be *italicised*, **not** (bracketed) nor underlined and should follow the English name (where applicable) with no separating comma. English names should start with lower case letters unless incorporating other names warranting capitalization (eg Brandt's bat).

References to journals and books should please be as below. Please note and use the capitalization and italic convention.
WOODRUFFE-PEACOCK, Rev E.A., 1900. The Lincolnshire Naturalists at Freiston. *The Naturalist*, **25**: 141-144.
DUDDINGTON, J. & JOHNSON, R. 1983. *The Butterflies and Larger Moths of Lincolnshire and South Humberside*. Lincolnshire Naturalists' Union. Lincoln. 299pp.

The final copy date is **31st March** of the year in which the Transactions are to be issued. Please contact the editors directly if there is difficulty in meeting this deadline. If in any doubt as to whether your observation merits a note or an article, or you have any other queries please do get in touch with the editors c/o Lincolnshire Naturalists' Union, Whisby Nature Park, Moor Lane, Thorpe-on-the-Hill, LN6 9BW to whom texts should be sent. A guidance note is available and is sent out to recorders. Otherwise, please attempt to imitate the format in this issue of the Lincolnshire Naturalist.

Editorial

Mark Crick

The editorial team of Phil Porter, Graham Weaver, John Margetts, Nick Tribe and I would like to thank Roger Key for his 10 year stint in the editorial boiler room of this publication. Roger remains part of the editorial team in an advisory capacity and has provided invaluable assistance, guidance, encouragement and commiserations for us novices. We hope that the editing standards of this and the forthcoming Volumes maintain the high standards that Roger has set.

The editorial team was formed as it was felt that the production of such a high-quality journal could not be left to an individual unaided. I am acting as the main point of contact between the editorial team and the contributors. The team would like to thank all the contributors for their prompt submission of copy, adhering to the editorial guidelines and producing yet another series of fascinating articles on the natural history of our county.

THE LINCOLNSHIRE NATURALIST

including
Transactions of the Lincolnshire Naturalists' Union
for 2003
Volume 26, Part 1, 2004

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cover picture **Pine Marten** photo Paul Glendell/ English Nature